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THE GREEN SUPPLY CHAIN AND ITS IMPACT ON THE PERFORMANCE OF THE SUPPLY CHAIN ANALYTICAL STUDY IN THE UNION COMPANY FOR FOOD INDUSTRIES \ BABEL

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Key Words: Supply Chain Performance, Dimensions Of Green Supply Chain.

ABSTRACT

The current research aims to identify the green supply chain and its impact on the performance of the supply chain, an analytical study in the Union Food Industries Company \ Babel. and skills in their field of work, as their responses were recorded on a set of test items that were distributed to them in a questionnaire prepared by the researcher to identify the extent of interest and availability of the dimensions of the green supply chain in the researched company and the performance indicators of the supply chain in it. The results of the statistical analysis of the data showed the presence of positive indicators on providing the dimensions of the green supply chain in the Union Food Industries Company \ Babel and that these indicators are important and have a direct impact on improving the performance of the supply chain in the company. Therefore, the researcher recommends that companies should move towards protecting the environment through awareness of the pollution damage that they cause as a result of their operations and activities in the environment, and that the development of the industry must take place through increased attention to the dimensions of the green supply chain represented by design, purchasing, green manufacturing, rapid and effective treatment of waste and spreading environmental awareness to consumers And design a marketing mix to market green products according to market requirements.

INTRODUCTION

The great and accelerating development in the volume of industrial businesses of companies and the accompanying increase in emissions affecting the surrounding environment has brought about clear effects in the ecosystem

represented by climate changes and pollution of air, water and soil, which prompted governments and international organizations to increase attention to environmental issues, and put pressure on companies to work with regulations and regulations and environmental legislation to limit the impact of those emissions on the environment. Which prompted those companies to search for the best ways and methods that would preserve the environment and reduce pollution. The green supply chain is one of the most effective methods followed by companies that have adopted environmental thinking in their work to preserve the environment and the sustainability of their sources and to reduce pollution that accompanies their activities and production operations, where the green supply chain represents the way that enables companies to understand what they should act regarding the scarcity of resources. It is possible to use green marketing, for example, to reduce the waste of resources during the marketing process, as well as directing customers to practice environmentally friendly consumption, which leads to reducing the cost of packaging and recycling and improving the service of companies and the quality of products And which is a good indicator of the company's performance, thus enhancing its competitive advantage and social reputation, as continuous improvement in products and processes creates great opportunities for preventing pollution and reducing waste.

METHODOLOG

First: Research Problem

Many companies today, in all their activities, starting from obtaining raw materials and production requirements, to distributing and delivering final products to consumers, to adopting and applying modern economic concepts, especially in the field of preserving the environment and its natural resources, and working to provide products that are not harmful to the environment using green raw materials. And production processes that consume less energy and meet the needs of the final customer with the right quality, the right price, the right time and the right place. The green supply chain is one of those concepts and strategies that many industrial companies can adopt to enhance their performance and profitability and to maintain their competitive advantage among companies in the labor market. Therefore, the research problem was identified. The current question: “What is the green supply chain and its impact on the performance of the supply chain Analytical study in the Union Company for Food Industries \ Babel.

Second: Importance of Research

1-The real benefit of any research or study comes from the importance of the problem you are dealing with, the results you can achieve, and the recommendations and directions you provide that benefit researchers or companies in the labor market.

2-The current research gains its importance from the importance of the variables it deals with, which are represented in the green supply chain with dimensions (green design, green purchasing, green distribution, green

manufacturing, green transportation) and the dimensions of the performance of the supply chain

3-The current research supports the modern trends of industrial companies represented in adopting a production philosophy and working methods that will provide products that are not harmful to the environment using green raw materials and production processes with less energy consumption and reusing products after the end of the product life cycle to reduce pollution that has become the problem of the world today.

Third: Research objectives

The current research aims to identify the green supply chain and its impact on the performance of the supply chain in the Union for Food Industries \ Babel by answering a number of questions, including:

1-Recognize what the green supply chain is and what is the performance of the supply chain?

2-What are the dimensions of the most efficient and effective green supply chain that can contribute to improving the performance of the private supply chain in industrial companies?

3-What is the company's level of awareness in the field of study of the role and importance of the green supply chain in achieving and succeeding the performance of the supply chain?

4-Is there a correlation between the dimensions of the green supply chain (green design, green purchasing, green manufacturing, green distribution, green transportation) and supply chain performance?

5-What is the effect of green supply chain dimensions (green design, green purchasing, green manufacturing, green distribution, green transportation) and supply chain performance?

FOURTH: HYPOTHESES

The first main hypothesis*:*

It states that "there is a statistically significant correlation between the dimensions of the green supply chain (green design, green purchasing, green manufacturing, green distribution, green transportation) and the dimensions of supply chain performance (cost, flexibility, quality, delivery)." From it emerge the following sub-hypotheses:

A. The first sub-hypothesis: There is a statistically significant correlation between green design and the performance of the supply chain with its combined dimensions.

B. The second sub-hypothesis: There is a statistically significant correlation between green purchasing and the performance of the supply chain with its combined dimensions.

C. The third sub-hypothesis: There is a statistically significant correlation between green manufacturing and the performance of the supply chain with its combined dimensions.

D. Fourth sub-hypothesis: There is a statistically significant correlation between the green distribution and the performance of the supply chain with its combined dimensions.

E. The fifth sub-hypothesis: There is a statistically significant correlation between green transport and the performance of the supply chain with its combined dimensions.

2-The second main hypothesis: It states that "there is a statistically significant effect relationship between the green supply chain (green design, green purchasing, green manufacturing, green transportation in the performance of the supply chain (cost, flexibility, quality, delivery)." Sub-hypotheses emerge from them. next:

A. The first sub-hypothesis: There is a statistically significant effect relationship between green design on the performance of the supply chain with its combined dimensions.

B. The second sub-hypothesis: There is a statistically significant effect relationship between green purchasing on the performance of the supply chain with its combined dimensions.

C. The third sub-hypothesis: There is a statistically significant effect relationship between green manufacturing on the performance of the supply chain with its combined dimensions.

D. Fourth sub-hypothesis: There is a statistically significant correlation between the green distribution in the performance of the supply chain with its combined dimensions.

E. The fifth sub-hypothesis: There is a statistically significant effect relationship between green transport in the performance of the supply chain with its combined dimensions.

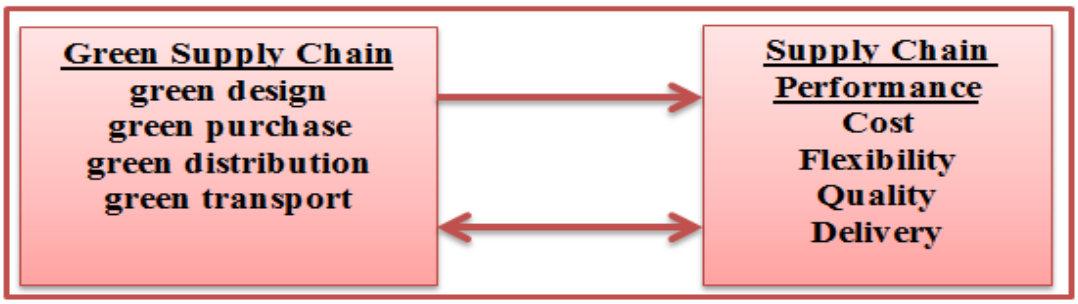

Figure (1) The hypothesis of the study

Fifth: Materials and Methods

We relied on the questionnaire to obtain data from the practical side. The questionnaire in its final form included three parts, the first part of which dealt with the information of the individuals on whom the research was conducted, while the second part included questions about the green supply chain and was prepared based on the random sample and the third includes measures of supply chain performance

Sixth: research sample

The study was applied to a sample of (292) employees of the Union Food Industries Company in Babylon, and the random sampling method was adopted in order to collect the necessary data.

LITERATURE REVIEW

First: Green Supply Chain Concept

The green supply chain is an effective tool in improving environmental, economic and social performance and improving relations between suppliers, customers and producers in the long run. The green supply chain is also seen as integrating environmental elements and working to achieve the maximum possible amount of comprehensive environmental profits by relying on the product life cycle approach through product design, material selection, manufacturing, sales and payback period, thus helping the company achieve sustainable development and improve performance on the economic, social and environmental levels (Guang et al., 2012:54).

The green supply chain is an important innovation that helps the production processes extend (Shekhar, 2013:247), which is “an integrated strategic system that takes into consideration the green concepts with the supply chain, as considered by (Luthra et al., 2013: 33)” the process that It includes the dimensions of green purchasing, green manufacturing, green distribution, and reverse supply in the green supply chain. The concept of the green supply chain also represents the environmental principles that are incorporated into a mechanism to regulate suppliers and assess their environmental performance and ability to develop environmentally friendly products. It is the upper and lower flow of raw materials, finished goods, and associated information between suppliers, the company, sellers, and end customers (Kotler and Astrong., 2000:354; Hwang and Kim, 2019:4).

Second: The importance of the green supply chain

a. Implementing the dimensions of the green supply chain leads to achieving economic benefits, improving environmental performance and reducing waste
b. Choosing the supplier that is environmentally friendly and works to provide raw materials that do not cause harm to the environment (Evans, 2009:188).

c. The effective implementation of the dimensions of the green supply chain occupies an important role in increasing the competitiveness and economic performance of companies, as well as developing the companies' ability on the level of environmental performance as well as other dimensions of performance such as cost and quality (Niemann, 2016:981)&(Gandhi et al., 2015:96).

d. It increases opportunities for innovation and continuous improvement of environmentally friendly products and to find new markets for green products (Farahani et al., 2009: 20).

Third: Green Supply Chain Objectives

a. Preserving the environment, reducing the volume of waste, and sustaining natural resources (Kadam, 2017: 39).

b. Reducing waste while ensuring customer satisfaction and maximizing profits (Lakshmi Mea and Chitramani, 2014:1-2).

c. Achieving high performance and competitive advantage by implementing the dimensions of the green supply chain in the industrial sectors and working on creating green products (Asrawi, 2016: 20).

d. Achieving efficiency, increasing market share and reducing environmental risk (Amemba et al., 2013:51).

e. The green supply chain provides the right product to the customer at the right cost, shape, and quantity (Chin et al., 2015:695).

Fourthly: Dimensions Green supply chain

A. Green design

It means designing products that comply with environmental requirements and take into consideration environmental safety and health during production processes and the life cycle of the product. It is considered a common entrance to change potentially harmful or dangerous materials or processes with a less dangerous substance or process. This procedure is undesirable when it leads leads to a rapid depletion of scarce resources (Amemba et al., 2013; 54). Where green design activity is described as the entrance that seeks to reduce the environmental impact of the product through its life cycle and design process (Ryun, 2010:3), that is, it is related to the design of a good or service that encourages environmental awareness, and aims to design products in a way that reduces the consumption of resources Energy, emission of hazardous substances, product design with reusability, recycling, recovery of resources, parts and components, and resource efficiency. Acceptable when it leads to rapid depletion of rare materials. Green design has been called by many names, some of them called it sound design (ESD), design for the environment (DFE), and sustainable design (SD). (Choudhary and Seth, 2011, 4988), and (Luthra et at ., 2013: 938; Masoumik etal., 2015:671), stressed the importance

of thinking about the green environmental product when designing, innovation and continuous improvement, through green design, which is considered One of the key dimensions in the green supply chain is the fact that a large proportion of the cost that is calculated through the life of the product is guaranteed and determined at the design stage.

B. Green manufacturing

It is one of the dimensions of the green supply chain, which adopts a systematic approach in implementing activities that require less energy consumption, reduce waste in materials necessary for production, and reduce environmental pollution (Song., 2009: 240) (Gao, Li, and. It depends on The use of environmentally friendly energy sources and less energy consumption such as solar energy and waste recycling (reverse supply). It is also known as green production or environment-related manufacturing, which depends on saving energy and reducing consumption and controlling pollution and in the entire production process through advanced technology and management in order to reduce pollution and waste (Huiyu, 2010: 17), as green manufacturing aims to improve production processes and manufacture environmentally friendly products constantly in order to prevent pollution (water, air, soil) (Routroy., 2009: 290) and that it uses inputs with low environmental impact that work High efficiency and minimum waste and pollution.

C. Green purchasing

It is of great importance in building long-term strategic relationships with suppliers, and it is considered a highly effective driving force for companies to work on developing environmentally friendly products and services (General., 2000:219). The basic idea of green purchasing depends on reducing the consumption of resources, choosing the appropriate suppliers, choosing materials that have little negative impact on the environment, as well as using methods and techniques, setting appropriate environmental requirements for the types of procurement, and logistical support (technical, financial) for suppliers to reach the environmental goals (Gabriel, 2016:41). That is, the focus is more on environmentally conscious dimensions, including reducing resources, eliminating waste, reusing, recycling, technology and replacing materials without affecting physical property (Chen, 2012: 2546). Among the most important reasons for companies to adopt green purchasing, according to the viewpoint of (hectare et al, 2011:545) are as follows:

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Responding to the needs and desires of customers in the dimensions of environmentally friendly activities.

Reducing costs and financial requirements for green supply chain operations.
(Wisner et al., 2012: 102) also emphasized that green purchasing is an essential function that has multiple goals, including ensuring materials and other purchases by the company to meet the manufacturing needs and environmental goals of the company. The importance of the green procurement process is illustrated by the following: (Fotiou. ,2007:27). Reducing environmental pollution and emissions to a minimum.

-Improving the competitiveness of companies in the local markets. It contributes to the creation of new markets.

-Provides the market with new products that have a low impact and emissions on the environment.

-Contributes to increasing the recyclability of the materials produced in the company.

D. Green distribution

Green distribution includes green packaging to reduce packaging volume, use green packaging materials, enhance recycling and reuse programs, adopt returnable packaging methods, and use the warehouse system (Chin et al., 2015:697). Green distribution also includes activities And means of transportation that aim to improve the environmental performance in the company's green supply chain through the processing of the company's raw materials (Mukonza and Swarts, 2019:6). Green distribution consists of green packaging and green logistics, where packaging characteristics such as size, shape and materials affect distribution because of their impact on the characteristics and features Product transportation and better packaging, along with different loading patterns and rearrangements, can reduce material use, increase storage space use, and reduce the amount of processing required. (Ninlawan et al.,2010:2).

E. Green Transportation

It is one of the main activities of green supply chain operations. (Wang and Lua, 2010:11-12), which aims to increase the amount of products transported or that are transported at the lowest possible cost and damage to the environment during the process of transportation or traffic in the streets, which is reflected positively on reducing the volume of emissions of gas (CO_2) Caused by the combustion of fuels for transportation to achieve the integration of the green supply chain and the environmental, economic and social sustainability of the community it serves. (Schafer, 1998:455-477) And companies should implement the green transportation system in the short term by taking advantage of times outside the peak period and redefining the number of trucks for road transport and determining the least crowded roads or creating a central storage and distribution area or creating a distribution network Overlapping . (Cazzaniga and Foschi,2002:222)

Fifth: Supply Chain Performance

(Kim, 2004:38) sees it as the integration of the main business processes that include the provision of products, services and information by suppliers to customers in a way in which the customer and related parties get the added value, and (Beamon, 1999:275) believes that there are a number of performance measures that It is used to measure the efficiency of the company, and this is what achieves effectiveness and benchmarking between

companies. Measuring performance is important in achieving competitive advantage and continuous improvement between companies. Companies focus in determining the necessary performance measures for the supply chain with several factors that are taken into consideration, namely quality, service, cost, and time. Waiting (Zhang and Liu, 2008:1) .(Sonia et al., 2008:1) believes that measuring the performance of the supply chain is the process of measuring real work performance in the company's environment to develop plans, programs and processes and continuous improvement through specific criteria represented by creativity, cost, customer , quality, etc., and actual control over the arrival of the final product to the customer.

Sixth: Importance Of Supply Chain Performance

(Mentzer, 2003: 459) believes that applying and improving the performance of the company's supply chain is beneficial in several areas:-

a. Reducing the cost of processing and capital costs.

b. Increase market share and sales.

c. Increasing the marginal profit of products and increasing the company's cash flow.

d. Increasing manufacturing efficiency at all levels and accomplishing work distinctly.

e. Enhancing customer contact and acquisition.

f. Achieving operational excellence and increasing the market value of the company.

Seventh: Dimensions of performance supply chain

A. Cost

Providing a service or product at the lowest possible cost to the satisfaction of the company’s customers requires it to design and operate operations to make them effective using accurate analysis of operations, manpower treatment, methods used, waste or rework, overheads and other factors such as investments in facilities or automated technology to reduce cost For each unit of the product (Homgren et al., 2000:463), it was expressed by (Ferry et al, 2007:20) the efficiency, which includes waste costs, storage costs, transportation costs, labor and profit. It was also referred to (Litte, 2010: 3) that it includes "sales, demand planning, scheduling, purchasing, wholesalers, inventory turnover, rate of return for storage and transportation." (Halme, 2012:26) describes it as “a characteristic that describes the cost of operating the process and includes the costs of labor, materials, transportation.” The costs of the supply chain can be direct or indirect, fixed or variable, short-term or long-term, as companies must Providing a kind of compromise between the cost and the characteristics of their products and services. In general, most

companies choose to reduce the total cost in order to reduce employee compensation rates and achieve higher levels of productivity (Abou-Moghli et al., 2012:4).

B. Flexibility

It refers to the speed of the performance of the supply chain in response to changes in the external environment and random fluctuations in the market and the ability to change based on customer requirements (Shafiee et al., 2014:21) as considered by (Mogeni, 2016: 2224) as the ability To respond to uncertainty regarding volume, distribution, and response related to the new product. It is essential in building a sustainable competitive advantage in a turbulent market. It reduces the impact of uncertainty across supply chain performance by helping companies introduce new products that quickly support rapid product customization, reduce lead time in manufacturing, reduce cost of customized products, and reduce inventory levels. Which leads to improving the performance of the supply chain and thus improving the company's performance and providing its products in a timely manner. There are several areas referred to (Porter, 2011:195) in which flexibility can appear, as follows:

Product flexibility: the ability to respond to changing customer needs through new product designs.

-Elasticity of volume: It is represented in the ability to reduce or increase production in response to changes in demand. There may be a need for volume elasticity for seasonal changes in demand, with which companies are forced to respond to changes in demand by the minute.

Flexibility can be represented by the company's ability to provide a variety of products at the right time and its ability to develop existing products and improve its operations to provide new products that meet the needs and desires of customers (Al-najjar, 2016:120).

C. Quality

It is an integrated approach to achieving and maintaining high quality of production with a focus on maintenance and continuous improvement of operations and prevention of defects at all levels and in all functions of the company in order to meet or exceed customer expectations (Beckman and Sinha, 2005:115), and it can be achieved Quality through two dimensions, one is the quality of design, which means adapting the design of the product to its function, and the other is the quality of conformity, which represents the company's ability to transform inputs into outputs according to the specific design characteristics (Abou-Moghli et al., 2012:4) Quality is a critical factor for the success of many Industrial or service companies, public or private, being a cornerstone for achieving competitive advantage (Alghamdi, 2016: 145). It also has the ability to provide products at the lowest cost and free from defects, and to ensure the achievement of distinction for the company in light of the current competition in the market, and to represent the overall

characteristics and characteristics of the product that meet the requirements of customers. 2016:120). It means the degree of excellence in a particular good or service provided (Chamsuk et al., 2017:103).

D. Delivery

Delivery is defined as the time reduced from the date of receiving the order from the supplier to receiving the product requested by the customer. The delivery period (waiting period) consists of several sub-series, including the internal delivery found in each department of the supplier and the external delivery lead time associated with the transfer of the product Finally to the customer (Lockamy and McCormack, 2004: 1192), early or late deliveries can lead to the introduction of products in the form of an increased cost in the performance of the supply chain, as early deliveries contribute to increasing inventory holding costs while late deliveries contribute In increasing the costs of production interruption and the loss of the company's reputation in the business market. Also, delivery is seen as the total delivery time required by the activity from start to finish, as companies can consider the delivery factor to compete among themselves and this may include (Abou et al., 2012:4) .

Delivery time, which expresses the efficiency of the performance of the supply chain and is a source of competitive advantage when companies try to reduce the time between receiving and accepting customer orders.

-Delivery is a measure of companies' adherence to delivery schedules agreed upon in advance with customers.

-Delivery can be measured by the time delay or the speed of operation in the time specified between the customer's request for a specific product and then receiving that product. Therefore, delivery can be used as a competitive factor to reduce costs, better customer service (Porter, 2011:13).

The practical aspect of research

First: - Coding the axes and paragraphs of the study

For the purpose of facilitating the statistical analysis process, the study variables (the green supply chain as an independent variable and the performance of the supply chain as a dependent variable) were compensated with a set of symbols and abbreviations, as shown in Table (1).

Table (1) Notation of measuring instrument axes

	code	paragraphs	Dimensions	variable
GSC	GA	5	Green design	green supply chain
	GB	5	Green purchase	
	GC	5	Green manufacturing	
	GD	5	Green distribution	

	GEE	5	Green transport	
PSC	PA	5	Cost	supply chain performance
	PB	5	Flexibility	
	PC	5	Quality	
	PD	5	Delivery	

Second: - Analyze the normal distribution

In order to generalize the results of the study to the study population, it must first be confirmed that the data withdrawn from the studied sample is subject to a test of the normal distribution, and to verify the null assumption "that the data withdrawn from the studied sample do not follow the normal distribution at a level of significance greater than (0.05)", the researcher used the test (Kolmogorov-Smirnov) and the graphs of the data, and Table (2) shows the tests of the normal distribution for the study variables.

Table (2) Tests for normal distribution analysis of the study variables

df	Sig.	Kol-Smi	Dimensions
292	0.200**	0.151	Green design
292	0.200**	0.155	Green purchase
292	0.200**	0.114	Green manufacturing
292	0.200**	0.164	Green distribution
292	0.200**	0.170	Green transport
292	0.200**	0.204	Green supply chain
292	0.200**	0.193	Cost
292	0.200**	0.198	Flexibility
292	0.200**	0.193	Quality
292	0.200**	0.200	Delivery
292	0.200**	0.188	Supply chain performance

Third: - Descriptive statistics of the research data

To find the arithmetic means, standard deviations, and the relative importance of the study tool items, the statistical program (SPSS vr. 27) was used.

1-Dimensions of the green supply chain

A. Green Design

The results of Table (4) indicate that the general average of the arithmetic means for the green design dimension was (3.58) and an answer trend towards agreement, indicating agreement (72%) of the studied sample members, and the second paragraph (GA2) came in first place and to the effect that (the company places in its priorities the design of products in it Less use of energy and raw materials manufactured from it) with an arithmetic mean close to (3.8) and standard deviation (0.855), and the fifth paragraph (GA5) came in the last place and it says (the company supports the design of the process that does not pose a threat to health) with an arithmetic mean and its peak (3.37) A

standard deviation of (1.052) towards a neutral answer, indicating the interest of the studied sample to set priorities for designing products that are less harmful to the environment.

Table (4) Means, standard deviations, relative importance, and level of answer for the green design dimension

Order Of Importance	Answer direction	Relative importance	Strongly agree		Agreed		neutral		not agree		Strongly disagree		Standard deviation	Mean	Para
			%	S	%	S	%	S	%	S	%	S			
3	High	72%	17.1	50	34.6	101	40.1	117	5.8	17	2.4	7	0.921	3.58	GA1
1	High	76%	19.2	56	49.7	145	24.7	72	5.1	15	1.4	4	0.855	3.8	GA2
4	High	71%	15.8	46	33.9	99	40.1	117	8.6	25	1.7	5	0.917	3.53	GA3
2	High	73%	14.0	41	45.9	134	30.8	90	7.2	21	2.1	6	0.886	3.63	GA4
5	mild	67%	15.4	45	32.5	95	26.7	78	24.0	70	1.4	4	1.052	3.37	GA5
	High	72%	**16.3**		**39.32**		**32.48**		**10.14**		**1.8**		**0.539**	**3.58**	**Green design overall**
			55.62						**11.94**						

B. Green Buying

The results of Table (5) show the agreement percentage for the green purchase dimension amounted to (69%), with a mean of (3.45) and a standard deviation of (0.678) with a high response level. Environmentally, regardless of the price level) with a mean of (3.5) and a standard deviation of (0.914), a high agreement level and a relative importance equal to (70%), while the third paragraph (GB3) of (the company works with other functions such as the production function to discuss and improve Green purchasing procedures) ranked last with an agreement ratio of (3.32), an arithmetic mean of (1.118) and a standard deviation of (66%), indicating the interest of the studied sample using environmentally friendly raw materials in order to ensure clean production and green purchase.

Table (5) Means, standard deviations, relative importance, and level of answer for the green purchase dimension

Order Of Importance	Answer direction	Relative importance	Strongly agree		Agreed		neutral		not agree		Strongly disagree		Standard deviation	Mean	Para
			%	S	%	S	%	S	%	S	%	S			
4	High	69%	16.1	47	37.3	109	22.6	66	22.3	65	1.7	5	1.058	3.44	GB1
1	High	70%	16.1	47	28.8	84	45.5	133	7.9	23	1.7	5	0.914	3.5	GB2
5	mild	66%	18.8	55	24.3	71	29.8	87	24.3	71	2.7	8	1.118	3.32	GB3
3	High	69%	14.4	42	31.2	91	44.2	129	7.9	23	2.4	7	0.917	3.47	GB4
2	High	70%	17.5	51	29.1	85	43.2	126	6.5	19	3.8	11	0.979	3.5	GB5
	High	69%	**16.58**		**30.14**		**37.06**		**13.78**		**2.46**		**0.678**	**3.45**	**Total Green Purchase**

C. Green Manufacturing

The results of Table (6) show that the overall average of the arithmetic circles for the green manufacturing dimension was (3.61) and towards a high response, indicating agreement (72%) of the studied sample members. Wastage of resources and time) with an arithmetic mean close to (3.7) and a standard deviation of (0.877), and the fifth paragraph (GC5) came in the last place and it says (the company provides solutions to the problems facing the process of recycling its products continuously) with an arithmetic mean of its peak (3.53) and a standard deviation Normative (0.935) with a high response direction of (71%), indicating the interest of the studied sample in developing the necessary plans to reduce waste in resources, time and efforts of workers and address problems in order to continue manufacturing green products free of losses.

Table (6) Means, standard deviations, relative importance, and answer level for the green manufacturing dimension

Order Of Importance	Answer direction	Relative importance	Strongly agree		Agreed		neutral		not agree		Strongly disagree		Standard deviation	Mean	Para
			%	S	%	S	%	S	%	S	%	S			
2	High	74%	15.4	45	47.9	140	27.7	81	7.2	21	1.7	5	0.88	3.68	GC1
1	High	74%	14.7	43	51.0	149	25.3	74	6.8	20	2.1	6	0.877	3.7	GC2
4	High	71%	19.2	56	30.5	89	40.1	117	7.5	22	2.7	8	0.974	3.56	GC3
3	High	72%	18.5	54	30.8	90	42.1	123	6.8	20	1.7	5	0.926	3.58	GC4
5	High	71%	16.8	49	31.8	93	41.8	122	7.2	21	2.4	7	0.935	3.53	GC5
	High	72%	**16.92**		**38.4**		**35.4**		**7.1**		**2.12**		**0.528**	**3.61**	**total green manufacturing**

D. Green Distribution

The results of Table (7) indicate the percentage of agreement for the dimension of the green distribution amounted to (69%), with a mean of (3.46) and a standard deviation of (0.638), with a high response level, and the third paragraph (GD3) related to (the company cooperates with distributors and processors to develop friendly programs Environment) came in the first place with a mean of (3.61) and a standard deviation of (0.885), with a high level of agreement and a relative importance of (72%), while the fourth paragraph (GD4) related to (the company uses packaging materials that are not harmful to the environment) came in the last place With an agreement ratio of (70%), with a mean of (3.52) and a standard deviation of (0.906), indicating the interest of the studied sample to enter into alliances with distributors and processors for the purpose of developing environmentally friendly programmers, systems and activities.

Table (7) Arithmetic means, standard deviations, relative importance and level of answer for the dimension of the green distribution

Order Of Importance	Answer direction	Relative importance	Strongly agree		Agreed		neutral		not agree		Strongly disagree		Standard deviation	Mean	Para
			%	S	%	S	%	S	%	S	%	S			
3	High	70%	13.7	40	34.9	102	42.1	123	6.5	19	2.7	8	0.906	3.5	GD1
4	mild	68%	15.8	46	32.9	96	26.7	78	23.3	68	1.4	4	1.05	3.38	GD2
1	High	72%	17.1	50	34.9	102	40.8	119	5.8	17	1.4	4	0.885	3.61	GD3
5	mild	66%	16.4	48	27.1	79	29.5	86	24.3	71	2.7	8	1.093	3.3	GD4
2	High	70%	16.1	47	29.8	87	45.9	134	6.2	18	2.1	6	0.906	3.52	GD5
	High	69%	**15.82**		**31.92**		**37**		**13.22**		**2.06**		**0.638**	**3.46**	**Total green distribution**

Fourth: Dimensions of supply chain performance

A. Cost

The results of Table (9) show that the agreement percentage for the cost dimension amounted to (70%), with a mean of (3.52) and a standard deviation of (0.632), with a high response level. Quantity of products in order to reduce costs) ranked first with a mean of (3.62) and a standard deviation of (0.954), and a high agreement level and a relative importance equal to (72%), while the fourth paragraph (PA4) of (the company is interested in reducing the costs of its products increases of demand for it) in the last rank with an agreement rate of (69%) and a mean of (3.44) and a standard deviation of (0.949).

Table (9) Arithmetic means, standard deviations, relative importance and level of answer for the cost dimension

Order Of Importance	Answer direction	Relative importance	Strongly agree		Agreed		neutral		not agree		Strongly disagree		Standard deviation	Mean	Para
			%	S	%	S	%	S	%	S	%	S			
2	High	71%	17.1	50	36.6	107	32.5	95	11.3	33	2.4	7	0.981	3.55	PA1
1	High	72%	19.2	56	36.3	106	32.9	96	10.3	30	1.4	4	0.954	3.62	PA2
3	High	70%	15.8	46	36.0	105	32.9	96	13.7	40	1.7	5	0.972	3.5	PA3
5	High	69%	14.0	41	32.5	95	39.0	114	12.3	36	2.1	6	0.949	3.44	PA4
4	High	70%	15.4	45	34.6	101	34.9	102	13.7	40	1.4	4	0.958	3.49	PA5
	High	**70%**	**16.3**		**35.2**		**34.44**		**12.26**		**1.8**		**0.632**	**3.52**	**Total cost**

B. Flexibility of performance

The results of Table (10) show that the overall average of the arithmetic circles for the performance flexibility dimension was (3.48) and in the direction of an answer towards agreement, indicating the agreement of (70%) of the studied sample members, and perhaps the paragraph that enriched this dimension is represented in the first paragraph (PB1) to the effect that (the company enjoys With the ability to adapt to the changes in the surrounding environment) with an arithmetic mean close to (3.56) and a standard deviation of (0.956), and the fourth paragraph (PB4) came in the last place and it says (the company is interested in making its operations, products and rotation with a relatively high flexibility in performance) with an arithmetic mean of its top (3.44), standard deviation (0.97), with a high response direction of (69%).

Table (10) Arithmetic means, standard deviations, relative importance and level of answer for the dimension of performance flexibility

Order Of Importance	Answer direction	Relative	Strongly agree		Agreed		neutral		not agree		Strongly disagree		Standard d...	Mean	Para
			%	S	%	S	%	S	%	S	%	S			
1	High	71%	16.1	47	39.4	115	30.8	90	12.0	35	1.7	5	0.956	3.56	PB1
2	High	69%	16.1	47	30.8	90	38.4	112	13.0	38	1.7	5	0.968	3.47	PB2
4	High	69%	18.8	55	26.4	77	38.0	111	14.0	41	2.7	8	1.036	3.45	PB3
5	High	69%	14.4	42	33.2	97	37.0	108	13.0	38	2.4	7	0.97	3.44	PB4
3	High	69%	17.5	51	31.2	91	36.0	105	11.6	34	3.8	11	1.03	3.47	PB5
	High	70%	16.58		32.2		36.04		12.72		2.46		0.692	3.48	Total flexibility of performance

C:- quality

It is noted from the results of Table (11) that the percentage of agreement for the quality dimension amounted to (70%), with an arithmetic mean of (3.51) and a standard deviation of (0.642) with a high response level, and this indicates the interest and agreement of the sample studied in the fourth paragraph (PC4) related to (care The company aims to achieve excellence and competitive superiority by raising the level of quality) with a mean of (3.54) and a standard deviation of (0.982) and a high agreement level and a relative importance equal to (71%), while the fifth paragraph (PC5) related to (the company is spreading the concepts of Quality among workers in its various departments) ranked last with an agreement rate of (70%), a mean of (3.5) and a standard deviation of (0.99).

Table (11) Arithmetic means, standard deviations, relative importance and level of answer for the quality dimension

Order Of Importance	Answer direction	Relative importance	Strongly agree		Agreed		neutral		not agree		Strongly disagree		Standard deviation	Mean	Para
			%	S	%	S	%	S	%	S	%	S			
4	High	70%	15.4	45	34.6	101	36.0	105	12.3	36	1.7	5	0.954	3.5	PC1
3	High	70%	14.7	43	37.7	110	33.6	98	12.0	35	2.1	6	0.954	3.51	PC2
2	High	70%	19.2	56	30.8	90	35.3	103	12.0	35	2.7	8	1.02	3.52	PC3
1	High	71%	18.5	54	32.9	96	34.9	102	12.0	35	1.7	5	0.982	3.54	PC4
5	High	70%	16.8	49	33.9	99	34.6	101	12.3	36	2.4	7	0.99	3.5	PC5
	High	70%	16.92		33.98		34.88		12.12		2.12		0.642	3.51	Total quality

D .Delivery

The results of Table (12) indicate that the general average of the arithmetic circles for the delivery dimension was (3.49) and towards a high response, indicating the agreement of (70%) of the members of the studied sample, and perhaps the paragraph that enriched this dimension is represented in the third paragraph (PD3) to the effect that (the company reduces the cycle time Improving the product to provide it to the customer on time) with an arithmetic mean close to (3.58) and a standard deviation of (0.944), and the fourth paragraph (PD4) came in the last place, which states (the company achieves a competitive advantage by delivering products to the customer in the shortest possible time) with the middle of my calculation top (3.42) and a standard deviation of (1.011) with a high response direction, indicating the interest of the studied sample in reducing the time of the product improvement cycle in order to deliver orders at the right time and place.

Table (12) arithmetic means, standard deviations, relative importance and level of answer for the delivery dimension

Order Of Importance	Answer direction	Relative importance	Strongly agree		Agreed		neutral		not agree		Strongly disagree		Standard deviation	Mean	Para
			%	S	%	S	%	S	%	S	%	S			
4	High	69%	13.7	40	37.0	108	34.9	102	11.6	34	2.7	8	0.961	3.47	PD1
2	High	70%	15.8	46	34.9	102	34.9	102	13.0	38	1.4	4	0.954	3.51	PD2
1	High	72%	17.1	50	37.0	108	33.6	98	11.0	32	1.4	4	0.944	3.58	PD3
5	High	68%	16.4	48	29.1	85	37.7	110	14.0	41	2.7	8	1.011	3.42	PD4
3	High	70%	16.1	47	31.8	93	38.7	113	11.3	33	2.1	6	0.961	3.49	PD5
	High	**70%**	**15.82**		**33.96**		**35.96**		**12.18**		**2.06**		**0.652**	**3.49**	**Total**
			49.78						**14.24**						**delivery**

HYPOTHESIS TEST

First, the correlation hypotheses

The results of the correlation matrix (14) show that there is a correlation between the study variables, which can be explained as follows:

The first main hypothesis: "there is a statistically significant correlation between the green supply chain and the performance of the supply chain".

The results of Table (14) indicate that there is a statistically significant correlation between the green supply chain and the performance of the supply chain with a strength of (0.927), which is a very strong relationship according to the assessment of (Agunbiade et al., 2013), and the strength of the link towards the dimensions of the performance of the supply chain ranged between (0.843) for the dimension of flexibility of performance to (0.859) for the dimension of cost, indicating the interest of the studied sample in

improving its flexibility to use knowledge, experience and skills in a flexible manner in order to improve the performance of its supply chain.

Table (14) The correlation matrix between the green supply chain and the performance of the supply chain

Supply chain performance	Delivery	Quality	Cost	الكلفة	Green supply chain	Green transport	Green distribution	Green manufacturing	Green purchase	Green design	
.815**	.687**	.701**	.695**	.923**	.878**	.749**	.736**	.724**	.741**	1	Green design
.864**	.762**	.725**	.924**	.755**	.912**	.793**	.839**	.657**	1		Green purchase
.764**	.662**	.873**	.627**	.651**	.841**	.729**	.695**	1			Green manufacturing
.873**	.915**	.771**	.762**	.761**	.922**	.819**	1				Green distribution
.817**	.744**	.779**	.723**	.758**	.914**	1					Green transport
.927**	.849**	.857**	.843**	.859**	1						Green supply chain
.898**	.759**	.797**	.753**	1							Cost
.921**	.845**	.775**	1								flexibility
.923**	.824**	1									Quality
.933**	1										Delivery
1											Supply chain performance
****. Correlation is significant at the 0.01 level (2-tailed).**											

SECOND: IMPACT HYPOTHESES

This section is concerned with testing the impact hypotheses that were previously identified for the purpose of determining the possibility of judging them with acceptance or rejection, as indicated in the following paragraphs:

The fourth main hypothesis: There is a significant effect relationship for the dimensions of the green supply chain (green design, green purchasing, green manufacturing, green distribution, green transportation) and the performance of the supply chain with its dimensions (cost, performance flexibility, quality, and delivery), which will be investigated according to For the multiple linear regression equation as follows:

$$Y = a + \beta_1 GA + \beta_2 GB + \beta_3 GC + \beta_4 GD$$

Thus, the levels of influence between the variables will be analyzed by testing the fourth main hypothesis, as the table (15) shows that the statistical indicators between the green supply chain and the performance of the supply chain were as follows:

$Y = a + \beta_1 GA + \beta_2 GB + \beta_3 GC + \beta_4 GD + \beta_5 GE$
$Y = 0.117 + 0.207\ GA + 0.304\ GB + 0.162\ GC + 0.319\ GD + 0.041\ GE$

Table (15) results of the effect of the green supply chain on the performance of the supply chain using multiple linear regression

The green supply chain in the performance of the supply chain		Variables
0.117	Constant	constant value
0.207	β_1	green design
0.304	β_2	green buy
0.162	β_3	green manufacturing
0.319	β_4	green distribution
0.041	β_5	green transport
0.927	R	Correlation coefficient value
0.859	R^2	Selection parameter value
373.707		The calculated F value
1.879		F tabular value
0.000		Sig.
معنوي		Significance level at 0.05
1.660		Durban Watson Value

CONCLUSIONS, RECOMMENDATIONS AND SUGGESTIONS

First: the conclusions

1-There is a statistically significant correlation between the green supply chain and the performance of the supply chain, which is a strong relationship.

2- There is a significant effect relationship for the dimensions of the green supply chain (green design, green purchasing, green manufacturing, green distribution, green transportation) and the performance of the supply chain with its dimensions (cost, performance flexibility, quality, and delivery(

3-The results showed the keenness of the concerned company to cooperate with distributors and suppliers to develop environmentally friendly programs, indicating its interest in reducing the distance traveled when choosing distribution channels.

4-The results showed the concerned company's interest in setting its priorities in designing products that use less energy and the raw materials manufactured from them, which contributes to designing products in a way that allows recycling and benefiting from the wastes of the production process.

5-The concerned company seeks to develop its green operations by searching for means of transportation that achieve sustainable development, indicating the possibility of using means of transportation that preserve the transported products from damage or other damages.

6-The concern of the company concerned to achieve excellence and competitive advantage by raising the level of quality, referring to improving the quality of products through skills development, recruitment and training of employees.

Second: recommendations

1-The need for the concerned company to seek to design products that are easy to use and have a low risk of having them, which requires them to design the process in a way that does not pose a threat to health.

2-The need for the concerned company to focus on dealing with suppliers who are interested in providing environmentally friendly raw materials, which requires it to work on discussing and improving the green supply chain procedures.

3-The need for the concerned company to adopt an information system that will benefit from it in developing its products to be environmentally friendly products, which requires it to address the internal problems that hinder the recycling of its products.

4-The concerned company must have the ability to compete in the field of transportation based on quality, which requires it to use transportation that takes into account safety and security in the case of transporting final products to customers.

5-The need for the concerned company to pay attention to absorbing the new changes and to present its products with specifications that comply with the customer's expectations and exceed their expectations.

6- The need for the company to be keen to use methods that reduce the costs of processing materials, which requires it to make its operations, products and recycling with a relatively high flexibility in performance.

THIRD: SUGGESTION

To complement the current research, the researcher suggests conducting similar studies to find out the effectiveness of the Lean Supply Chain and its impact on the performance of the supply chain as an analytical study in the Union Food Industries Company \ Babel.

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