

The Impact of the PESTEL Framework in the Green Supply Chain: An Analytical Research in the State Company for Textile and Leather Industries

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DOI:10.37648/ijtbm.v13i01.009

¹Received: 11 December 2022; Accepted: 15 January 2023 ; Published: 09 March 2023

ABSTRACT

The research seeks to know the impact of the PESTEL variables, which refer to external environmental factors, which are (political, economic, social, technology, environmental, and legal), the extent of their impact on the green supply chain, and how the company obtains what it needs in light of the external environment variables to carry out its operations in a sustainable manner. Accordingly, a number of questions were raised about the research problem, including whether the company's adaptation to the PESTEL framework leads to the success of the green supply chain. The importance of research is highlighted by the importance of sustainability at the present time, so companies are trying, by adapting and analyzing external environmental factors, to exploit them by moving their companies towards sustainability and offering sustainable products. The research aimed to determine the extent of the impact of the PESTEL framework on the green supply chain of the company sampled in the research. The research relied on a questionnaire form to obtain data and used several statistical methods, including percentages, arithmetic mean, and standard deviation by relying on the statistical program (spss) to test the hypotheses. The research reached a set of conclusions, including the existence of a correlation and the existence of an influence between PESTEL and the green supply chain. The research reached a set of recommendations, including the recommendation of the management of the researched company to increase interest in adopting the strategies and policies necessary to manage the green supply chain due to the great advantages it provides, especially its role. In improving the environment under the adaptation of PESTEL factors.

Keyword :PESTEL; Supply Chain; Green Supply Chain; State Company for Textile and Leather Industries.

THE FIRST TOPIC: RESEARCH METHODOLOGY

First: The Research Problem

The research problem is the multiplicity of opinions regarding the impact of the PESTEL framework on the green supply chain, so the researcher decided to include or represent the research problem according to a number of the following questions:

1. Is there a relationship between the PESTEL framework and the green supply chain?
2. Is there an impact of the PESTEL framework on the green supply chain?
3. Does the company's adaptation to the PESTEL framework lead to the success of the green supply chain?
4. Does the lack of attention to the external environment and adaptation to it lead to the failure of the green supply chain?

¹ How to cite the article: Mahmoud B.I. (March, 2023); The Impact of the PESTEL Framework in the Green Supply Chain: An Analytical Research in the State Company for Textile and Leather Industries; *International Journal of Transformations in Business Management*, Vol 13, Issue 1, 100-109, DOI: <http://doi.org/10.37648/ijtbm.v13i01.009>

Second: The Importance of Research

The importance of the research can be summarized as follows:

The importance of the research is represented by the importance of its researched variables, as the research deals with two important variables, which are the PESTEL framework, which represents the external environment and the political, legal, economic, social and cultural variables it contains. as well as the green supply chain variable and its importance to many institutions, especially those oriented towards sustainability. The importance of the research lies in the environmental challenges caused by the PESTEL framework that are characterized by being uncontrollable, and therefore organizations try to adapt to these factors for the purpose of success, as well as because they have an impact on the company's internal environment, the green supply chain, environmental preservation, and environmental sustainability.

Third: Research Objectives

A main objective can be identified for this research, which is "to determine the extent of the impact of the PESTEL framework on the green supply chain." From the main objective, the researcher derives a set of sub-objectives that can be summarized as follows:

1. Determine the relationship between the PESTEL framework and the green supply chain.
2. Benefiting researchers and stakeholders regarding the results and scope of scientific research.
3. Identify the impact of the PESTEL framework on the green supply chain.

Fourth: Research hypotheses

There is a significant correlation between the PESTEL framework (X_i) and the green supply chain (Y_i).

There is a significant influence relationship between the PESTEL framework (X_i) and the green supply chain (Y_i).

Fifth: Research Model

The research addresses the first main variable, which is an independent variable, represented by the PESTEL framework, the external environment (X_i), while the second main variable is a dependent variable, represented by the green supply chain (Y_i), as in the diagram shown in Figure (1).

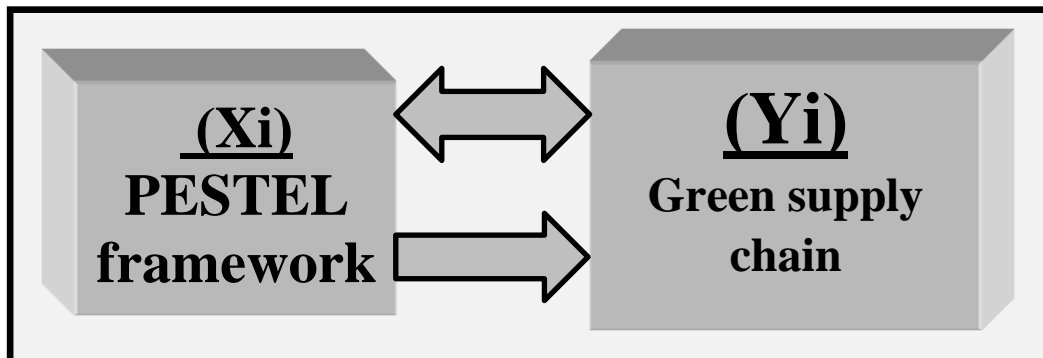


Figure (1) research model

Sixth: The Research Population and Sample

The researcher selected the General Company for Textile and Leather Industries to apply the practical aspect of the research. The research sample consisted of distributing (50 questionnaires) to a sample of individuals working with the same specialization and knowledge of the research topic in the company. The number of retrieved and valid questionnaires was (40 questionnaires), meaning that there are (10), Questionnaires are damaged and unrecoverable.

Seventh: Statistical methods used in the research

In analyzing the practical aspect of the research, the researcher used many statistical methods, which included:

1. The arithmetic mean: which is used to determine the level of response of sample members to the questionnaire items.

2. Standard deviation: which is used to measure the dispersion of values from their arithmetic mean.
3. Correlation and influence coefficient: to determine the strength of the relationship and influence between the research variables.

Eighth: Limits of Research

1. Spatial boundaries: The research was applied in the General Company for Textile and Leather Industries in Baghdad - Karrada.
2. Time limits: which include the duration of the research preparation, which took place during the year 2023 in the researched company in order to diagnose the research problem and distribute the questionnaire to the research sample during the aforementioned period.

Ninth: Methods of Data Collection

The current research has relied on several methods to collect data and information, including:

1. The theoretical aspect: To obtain the data necessary to achieve the objectives of the study and test its hypotheses, the researcher relied on many books, magazines, theses, and dissertations, as well as websites to obtain articles related to the subject.
2. The practical aspect: The researcher relied on a set of main tools, including the research questionnaire approved for this purpose as the most prominent tools used to collect primary data and information that included the practical aspects of the research.

THE SECOND TOPIC: LITERATURE REVIEW

First: The PESTEL framework concept:

PESTEL represents all external factors of the environment that can affect the company's ability to gain and maintain a competitive advantage. By analyzing factors in the external environment, managers can mitigate threats and exploit opportunities. Figure 2 of the PESTEL framework shows any external environmental factors as indicated (Rothaermel, 2017:67).

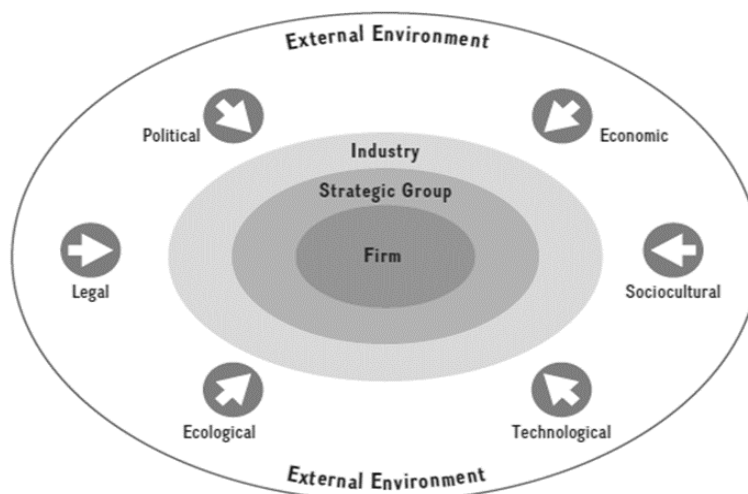


Figure (2): PESTEL Framework (External Environment Factors)

Rothaermel, Frank T, (2017), Strategic Management, New York, McGraw-Hill, 3 Education.

The PESTEL model can be defined as a framework that classifies and analyses an important set of external factors (political, economic, social, cultural, technological, environmental and legal) that may affect the company, and these factors can create opportunities and threats for the company (Rothaermel, 2017:66). It is also known as the set of external circumstances and factors affecting its life and development and no company can operate in isolation from the surrounding environment. The company obtains its inputs from the environment and its outputs are exported to

this environment (<https://specialties.bayt.com>). (Al Hadrawi and Suhail, 2015:53). Indicate that it is all outside the company's borders. He considers (Al-Barzanji and Hussein, 2017:41) that they are all factors that are difficult to control by the company. Al Bakri, 2020:130, are all elements outside the company's borders that possess the ability to influence all or part of the company.

Second: The importance of the PESTEL framework

Both (Saleh, 2010: 13) and (Al-Hadrawi and Suhail, 2015: 54) indicate that interest in the external environment of the company has grown in the literature of strategic management through study and analysis after the emergence of modern intellectual trends in the theory of the company at the end of the fifties and the beginning of the sixties. Such as open systems theory and the situational theory that represented the company. An organism that constantly seeks to change according to environmental conditions. Contemporary organizations do not exist in a vacuum, but rather the justification for their existence is to respond to the needs of society and the extent of the organizations' ability to respond to the external environment.

Interest in the issue of the impact of the environment on organizations has increased, and this interest has been reflected in hundreds of researches and studies that have dealt with this vital topic. These studies and research have concluded that a company's effectiveness depends on the degree of its success in adapting to environmental changes. It also needs markets to offer its outputs, whether these outputs are in the form of services or products to obtain energy to support its work. This has made the external environment one of the pressures, the external force affecting the company's strategies, priorities, and priorities towards the company achieving its goals of market leadership, leadership, and creativity. Hence, the importance of the environment and its factors in achieving the basic requirements for business organizations that desire to compete and succeed becomes clear.

Third: PESTEL framework factors:

(Rothaermel, 2017: 68-72), (Al-Hadrawi and Suhail, 2015: 53-55), (Al-Barzanji and Hussein, 2017: 41-44), and (Al-Bakri, 2020: 130-140) pointed out. (Saleh, 2010: 13-14) and (Al-Sumaidai, 2015: 173-175) refer to the PESTEL model factors or external environmental factors as consisting or divided into six parts, which are (political, economic, social, cultural, technological, environmental, legal). Together, they form the abbreviation (PESTEL), which is as follows:

- Political factors: Political factors resulting from the operations and actions of government bodies that can influence the decisions and behavior of companies. Political and legal factors are closely linked as political pressure often leads to changes in legislation and regulations.
- Economic factors: The economic factors in the company's external environment are largely macroeconomic, which affects economic phenomena on a large scale, and managers need to think about how the following five macroeconomic factors affect the company's strategy:
 - Growth rates: The general economic growth rate is a measure of the change in the amount of goods and services produced by a country's economy, and strategists look to the real growth rate that adjusts for inflation, as this real growth rate indicates the current business cycle of the economy, that is, whether business activity is expanding. Or shrink.
 - Employment levels (employment): Growth rates directly affect the level of employment. In times of prosperity, unemployment tends to decline and skilled human capital becomes a rare and more expensive resource. In cases of economic recession, unemployment rates rise, and as the number of people searching for work increases, capital Skilled humans are more plentiful and wages typically decline.
 - Interest rates: They are the amount that creditors pay in exchange for the use of their money and the amount that debtors pay in exchange for that use, adjusted for inflation, and the decline in real interest rates has a direct impact on consumer demand.
 - Price stability: No change in the price levels of goods and services is rare, so businesses often have to deal with changing price levels, which are a direct function of the amount of money in any economy.
 - Currency exchange rates: The currency exchange rate determines how many dollars one must pay for a unit of foreign currency, and is a critical variable for any company that buys or sells products and services across national borders.
- Social factors: Social and cultural factors derive from a society's cultures, norms and values, and since sociocultural factors are not only in flux but also vary, managers need to closely monitor these trends and consider the implications for company strategy.
- Technological factors: are the capture and application of knowledge to create new processes and products. Major innovations include clean manufacturing technology, six sigma quality, and biotechnology. If one thing is certain,

technological progress is constantly evolving and improving rapidly. It is not surprising that changes in the environment technological opportunities and threats to companies.

- Ecological (environmental) factors: These include broad environmental issues such as the natural environment, global warming, and sustainable economic growth. Businesses and the natural environment coexist in an interdependent relationship. Managing these relationships in a responsible and sustainable manner directly affects the continued existence of human societies and the organizations we create. Negative examples come easily to Mindfulness: As many business organizations have contributed to air, water and land pollution as well as the depletion of the world's natural resources, the relationship between organizations and the natural environment should not be hostile, and environmental factors can also provide employment opportunities.
- Legal factors: include the formal outcomes of political processes as reflected in laws, controls, and court decisions, all of which can have a direct impact on the profit potential of a company. Governments, in particular, can directly affect a company's performance through political pressure and legal sanctions, including Court rulings and industry regulations. Governments can often have positive legal and policy mechanisms to achieve desired changes in consumer behavior, such as encouraging consumers to purchase zero-emission vehicles. Some governments offer certain credit with the purchase of a new electric vehicle.

Fourth: The concept of the supply chain and the green supply chain

The supply chain can be defined as a system consisting of suppliers, manufacturers, distributors, and customers, where information flows in all directions. It is also described as a method, concept, philosophy, process, or strategy. Supply chain management is also known as a group of parties that manufacture goods and sell them to consumers. As obtaining Primary resources represent the starting point and the consumption of goods and services represents the end point (Obeidat and Shawies, 2007: 213). and (Al-Hayani, 2015: 20) indicates that the components of the supply chain consist of supplies entering the company from suppliers and suppliers, and supplies leaving the company to its agents and customers, as in Figure (3).

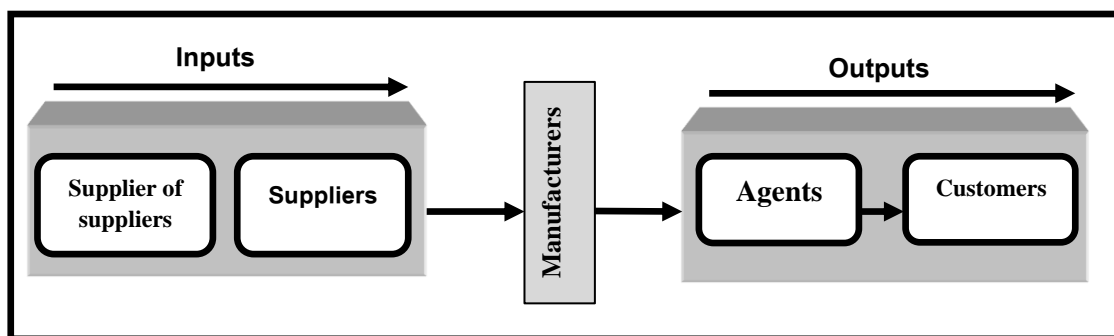


Figure (3): Components of the supply chain

Source (Al-Hayani, 2015: 20)

(Al-Amiri, 2008: 26) believes that the term green supply chain management differs from the concept of the supply chain, as it consists of four main parts: (management), which means the main relationship (planning, organization, direction, difference). But the second part is (chain), which means the interconnection between the main areas, or the third part is (processing), which means preparing products, services, products, and knowledge, while (green) refers to how to prepare Freund, so the supply chain is a succession of the chain of suppliers, stores, operations, and distribution.

(Ali and Mohsen, 2018: 225) indicate that the most important objectives achieved by supply chain management can be summarized as follows:

- Rationalizing the materials used in production processes.
- Protecting human health and the environment.
- Excluding the use of unsuitable (toxic) raw materials.
- Renewal of products.
- Reducing the level of environmental pollution instead of treating it.
- Reducing the risks of inputs and outputs of materials and energy.
- Taking into account environmental considerations when designing and operating production lines.
- Avoid harmful waste and emissions and reduce them to a minimum. especially toxic and hazardous ones.
- Reducing the pressures of environmental laws.

Fifth: Reasons for the trend towards a green supply chain

(Handal and Hajim, 2016: 85) believe that there are three approaches to adopting green strategies, which are:

- Eco-efficiency perspective: Green strategies are developed with the aim of reducing waste and using sustainable resources to maximize environmental performance.
- Competitive advantage perspective: Green strategies are used as a means to achieve competitive advantage through the process of product and technology innovation.
- Environmental and ethical perspective: The move towards green strategies is driven by the desire to reduce industrial impact on the natural environment rather than the desire to improve economic performance.
- In addition to government rules and legislation, environmental and social responsibility, green image, marketing and global competition.

Sixth: Green supply chain activities

(Omar and Agha, 2012: 271-273), (Al-Taie et al., 2012: 268-270), (Ali and Mohsen, 2018: 227), and (Al-Sabbagh, 2018: 82) indicate, through a review of the literature related to the subject of supply chain activities There is a clear discrepancy in the opinions of a number of writers whose writings researchers were able to review about supply chain management activities. but there is agreement on the most common activities, including (green sourcing and purchasing, green manufacturing, green marketing, and green transportation), and they can be explained as follows:

- Green purchasing: It is a behavior that consists of purchasing products that are (environmentally friendly, recyclable, sensitive or respond to environmental concerns, that help improve the safety and health of workers and customers, reduce pollution of natural resources and preserve them).
- Green manufacturing: Green manufacturing represents an important step in manufacturing to achieve sustainable development, as its essence is to reduce damage to the environment and achieve rapid economic growth in a sustainable manner. Green manufacturing represents a system that brings together issues related to the product design process with issues related to planning, manufacturing and control (control) to determine Measuring, evaluating and managing the flow of environmental waste ultimately aims to limit and reduce the impact on the environment.
- Green marketing: includes in its efforts issues related to the environment, or in other words, the use of inter-related claims in the field of marketing. This marketing approach coincides with the increasing global interest in protecting consumer rights, and the emergence of environmentally oriented company movements aimed at protecting people's rights to live in a clean and safe environment.
- Green transportation: an essential element in successful supply chain management. It is known and common that means of transportation lead to the emission of large quantities of dangerous gases and other pollutants that contribute to spoiling the air quality in cities, which requires the adoption of new methods that work to preserve the environment in the field of transporting products. Hence The concept of green transportation has emerged, as it is any means of transportation that has a low impact on the environment and makes a positive contribution to achieving environmental, social, and economic sustainability.

THE THIRD TOPIC - THE APPLIED ASPECT OF RESEARCH**First: a brief overview of the company**

The Textile and Leather Industries Company was formed in 1976 because of the merger of the General Leather Company, which was founded in 1945, with the General Bata Company, which was founded in 1932. It is one of the industrial facilities affiliated with the Ministry of Industry and Minerals. The company consists of a number of factories, as follows:

- Baghdad / Karrada factory outside: established in 1932.
- Tanning Factory / Saffronia - Saeeda:
- Sports Shoes Factory/Kufa: This factory was established in 1960.

Second: The Company's marketing activity

The company markets its products through its showrooms spread throughout Baghdad Governorate, as well as through its agents spread in all major governorates and cities throughout Iraq. The company also markets its products to all the various departments of the state and fulfills their requests in accordance with the specifications required by them. The company has the capabilities to export its products when requests are available. Products that are directly marketed to the consumer include the manufacture of all kinds of leather shoes, such as men's, women's, youth, children's, vegetarian, and children's shoes, slippers for all ages, and their seasonal winter and summer models, in addition to the

production of military service shoes of all kinds, industrial safety shoes and boots. and the manufacture of leather clothing to produce all types of leather clothing manufactured from Sheep and goat skins for both sexes and all ages.

Third: The future prospects of the company

The company is studying a comprehensive plan for a comprehensive rebuilding and development of its capabilities and keeping pace with market requirements in terms of variables in product diversification and development of models according to their seasons. and a comprehensive reorganization of its cadres and upgrading them. aiming to make better use of all human and material resources and raise the level of technical and marketing performance (domestic and export) by entering into (the field of investment). The joint venture, (the field of risk sharing, and any other fields with international specialized companies with internationally known brands).

Fourth: Results of the questionnaire in the General Company for Textile and Leather Industries

The research sample was chosen to include a group of individuals working with the same specialization and knowledge of the research topic in the General Company for Textile and Leather Industries for the purpose of answering the questionnaire paragraphs. because the two research axes (the effect of the PESTEL framework on the green supply chain) are closely and clearly linked to their manufacturing, administrative. and technical tasks. (50) Questionnaires (40) questionnaires were received, making the research sample size (40), and the results of their answers appeared as in Table (2) and Table (3).

Table (2) Frequencies of general data for the research sample in the leather industries company

Academic qualification		Social Situation		male or female		Length of service		Age of the individual		The position	
Bachelor's degree and above	Diploma and lower	other	Married	female	Male	more than 5	5 years or less	more than 30	30 years or less	Head of the Department	employee
11	29	12	28	17	23	28	12	32	8	3	37
40		40		40		40		40		40	

Table (3) Variations in answers to the items of the questionnaire on opinions about technical research (40) Variations in research, theories and follow-up in the Textiles and Leather Industries Company

n	Questions	Arithmetic mean	standard deviation
PESTEL framework (external environment) (Xi)			
1.	Legislation and laws affect the company's performance.	4.46	0.40
2.	The company meets customers' needs, desires and requests.	3.68	0.60
3.	The company relies on advanced technology.	3.60	1.02
4.	The company takes into account the environmental conditions surrounding it from competitors, supply and demand, suppliers, etc.	4.68	0.70
5.	Political factors play an important role in company management.	4.40	0.82
Total		4.16	0.70
Green Supply Chain (Yi)			
1.	The company deals with suppliers of good quality to preserve the environment.	4.20	0.61
2.	The company uses clean technology and energies.	3.60	0.60
3.	The company uses modern means of transportation to reduce polluting emissions.	3.94	0.54
4.	The company produces some products that are not harmful to the environment.	3.89	0.63
5.	The company uses environmental marketing efforts.	4.22	0.71
Total		3.97	0.61

Fifth: Analyzing the level of community members’ responses to the PESTEL framework analysis:

The answers of the community members to the items of the PESTEL framework, in general, tend towards agreement, as the weighted arithmetic mean reached (4.16), which is greater than the hypothesized arithmetic mean of (3). The answers of the community members were homogeneous, as the standard deviation reached (0.70). This means that this variable is considered it is largely clear to members of the research community and this is due to the high level of community members’ awareness and understanding of the importance of the external environment, as shown in Table (4).

Table (4) Level of community members’ responses and perceptions of the PESTEL framework

standard deviation	Arithmetic mean	Variables	n
0.70	4.16	PESTEL framework (Xi)	.1

Sixth: Analyzing the level of community members’ responses to the green supply chain variable

The answers of the community members to the items on the competitive advantage variable were towards agreement, as the weighted arithmetic mean reached (3.97), which is greater than the hypothesized arithmetic mean (test standard) of (3). The answers of the community members were homogeneous, as the standard deviation reached (0.61%). This This means that this variable is very clear to members of the research community and this is due to the high level of community members’ awareness and awareness of the importance of the green supply chain, as shown in Table (5).

Table (5): The level of community members’ responses and their perceptions of the green supply chain variable

standard deviation	Arithmetic mean	Variables	n
0.61	3.97	Green supply chain	.1

Seventh: Testing hypotheses

1- Correlation hypothesis: The first main hypothesis states (there is a significant correlation between the independent variable of the PESTEL framework “Xi” and the dependent variable the green supply chain “Yi” and from table (6) which shows the Spearman correlation coefficient with the p_value)) we note the following:

Table (6) Correlation coefficient with p_value between the PESTEL framework and the green supply chain

Green supply chain (dependent variable)			independent variable
connotation	P_value	R	
having a connection	0.000	0.39	PESTEL framework

The value of the correlation coefficient between the PESTEL framework and the green supply chain is (0.39), which is a direct and significant correlation coefficient, as the P_value reached (0.000), which is less than the level of significance (0.05). This means that there is a correlation with positive moral significance between the analysis External environment and green supply chain.

2- Impact hypothesis: The second main hypothesis stated (there is a significant influence relationship between the main independent variable of the PESTEL framework “Xi” and the main dependent variable of the green supply chain “Yi”) and Table (7) shows the values of the simple linear regression analysis of the PESTEL framework and the green supply chain.

Table (7) simple linear regression analysis values for the PESTEL framework and the green supply chain

Green supply chain (dependent variable)						independent variable
indication	regression coefficients		R ²	P_value	F	
	β	α				
Having Impact	(0.000) 0.39	(0.000) 2.173	0.317	0.000	30.146	PESTEL framework

The numbers in parentheses represent the (P_value) values of the f-test for the regression coefficients

The P_value=0.000 for the F test is less than (0.01). This means that there is a significant effect below the significance level of (0.01) in the PESTEL framework on the green supply chain.

TOPIC FOUR – CONCLUSIONS AND RECOMMENDATIONS

First: Conclusions

The researcher reached a set of conclusions that can be summarized as follows:

1. Business organizations operate in a dynamic, rapidly changing environment, and with the emergence of multiple modern concepts such as green processing, green manufacturing, green distribution and the green consumer. it is necessary to keep up with what is happening by constantly improving their purchasing performance with regard to supplying all the company's needs. and meeting the needs of the environment and customers
2. The process of adopting green production occurs through activating sustainable green operations, trying to eliminate waste, and working to dispose of it in a way that is less harmful to the environment, and will require green processing operations.
3. The elements of the external environment are among the most important factors influencing determining the nature of the products provided by companies and achieving their goals.
4. Lack of interest in improving the industrial sector of the market to become environmentally friendly and meet customers' needs.
5. The researched company's lack of interest in adopting the concept of a green supply chain.
6. The results of the statistical analysis revealed through the questionnaire that there is a correlation between the PESTEL framework and the green supply chain.
7. The results of the statistical analysis revealed that there is a positive significant effect of the PESTEL framework on the green supply chain.

Second: Recommendations

Through research and conclusions, the researcher reached a set of recommendations that can be summarized as follows:

1. Companies must keep pace with the technological development taking place at work to make the company more prosperous and developed. In addition, it must be of great importance, have a good reputation, and obtain customer satisfaction in all practical, technical, economic, and administrative aspects, by adopting all green concepts.
2. The surveyed company must work to increase employee awareness and preserve the environment by continuing to keep up with everything that shines on sustainability in all magazines.
3. We ask the management of the surveyed company to increase interest in adopting the strategies and policies necessary to manage the green supply chain, given the great advantages it provides, especially its role in improving the environment.
4. The researched company purchases green products (raw materials, raw materials, etc.) in a way that is compatible with environmental requirements, without harming it, and with the needs and requirements of customers.
5. The researched company must adopt a process of continuous improvement of equipment that is consistent with green equipment that serves the environment.
6. The company must anticipate external environmental challenges, which are considered uncontrollable, important and influential factors in companies. It must adapt to these factors and link them to the green supply chain, taking into account how to preserve the environment by developing new ideas and conclusions to solve all problems.
7. Conduct an intensive study of the markets to offer their products and support them with green marketing propaganda by focusing on the aspects that are concerned with not harming the environment or customers and putting them on the markets intensively so that they can lead the market, pioneer and innovate to win competition and success.
8. Making the company capable of achieving balance and preserving the environment to achieve the company's green goals.

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