SELINUS UNIVERSITY
OF SCIENCES AND LITERATURE

EFFECT OF GREEN SUPPLY CHAIN MANAGEMENT PRACTICES ON THE COMPETITIVE ADVANTAGE (CASE STUDY OF FOOD COMPANIES IN DAMASCUS AND ITS COUNTRYSIDE)

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A DISSERTATION

Presented to the Department of
BUSINESS ADMINISTRATION
program at Selinus University

Faculty of BUSINESS & MEDIA
in fulfillment of the requirements
for the degree of Doctor of Philosophy
in BUSINESS ADMINISTRATION

2023

Effect of green supply chain management practices on the competitive advantage

(Case Study on Food companies in Damascus and its countryside)

Ph.D. Thesis

at Selinus University of Sciences and Literature

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20.01.2023

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Introduction:

Operations management faces many challenges at present, the most important of which is the globalization of business, technological development, and intense competition that necessitated the diligent and continuous search for the best practices in the production process, starting from supply through production and ending with distribution and sale... Therefore, most organizations today tended to apply modern concepts and techniques such as Green Supply Chain Management... The term green supply chain is a modern terminology in the field of business management, and this modernity has given it a kind of ambiguity in some cases towards the understanding of the term itself by many. In many cases, it becomes more ambiguous or acceptable when applying this concept to immature markets.

Because of the multiplicity and diversity of environmental problems, which have become a real danger to humans, because of various human activities that did not take into account environmental issues, and which focused on the non-optimal and non-reconcilable exploitation with the environment and environmental resources, and thus environmental problems became one of the most important contemporary global problems that economic thought was concerned with. Environmental issues have been given increasing attention since the beginning of the nineteenth century, as many national, regional, and international efforts have been made that focused on environmental issues and environmental management, and in this regard, some see that the concept of the green supply chain is relevant. Link to environmental protection or social responsibility in the field of purchasing (supply), production, as well as marketing, as some see it as an expression of the non-profit organization's orientation in its dealings with society and customers, as well as its quest to achieve consumer protection.

Because of the development of such problems in the past decades: pollution, damage to the natural environment as a result of industrial waste, shrinking green spaces, production and marketing of goods harmful to the environment and humans, as well as human poor cooperation with the environment, a lot of government legislation was enacted to regulate the relationship between humans and the environment, which made Many institutions pay attention to this and include the environmental dimension within their production and

administrative policies, and from here the interest in a new pattern known as green supply chains began.

Based on the above, green supply chains are an integrated systemic philosophy and thought, aiming to create a positive impact on customers' preferences in a way that pushes them to seek products that are not harmful to the environment, modify and develop their consumption habits in line with that, and work to provide a product based on an integrated basis. Towards the environmental dimension, which may allow Syrian companies to compete even in international markets.

First Chapter: Study Methodology

1.1 Terminology of study:

Green Supply Chain Management: Application of environmental management principles to the entire set of activities across the whole customer order cycle, including, design, procurement, manufacturing and assembly, packaging, logistics and distribution (Handfield, Walton, Seegers, & Melnyk, 1997).

Competitive Advantage: Is the company's ability to become more attractive to customers, and to serve them better than other competitors (Saaty & Vargas, 2013).

1.2 The study problem:

The problem of the study is that the organization faces challenges represented in how to achieve a balance between providing products that meet the desires of customers in terms of quality, price, and time, and at the same time, the production of these products does not have negative environmental effects, which leads to the protection of the environment from pollution. The crisis that occurred in Syria has led to many problems, the most important of which are environmental problems, so organizations have to constantly work to improve their environmental performance, starting from the moment of thinking about the product through its design and obtaining the necessary resources for its production and marketing, which necessitated the need to search for an approach that helps the organization In achieving the goals it seeks to survive and continue in the business environment and to overcome competitors.

Although talking about green supply chains has become a common phenomenon globally, we find that academic studies related to the Syrian market are almost scarce if they do not exist at all, hence this point was a strong incentive to conduct such a study that may allow Syrian institutions to Compete even in international markets by working to provide a product based on an integrated basis towards the environmental dimension. In this context came the problem of our research, which can be formulated in the following questions:

Does (Food companies in Damascus and its countryside) apply green supply chain management practices?

Is there an impact of green supply chain practice elements (green purchasing, green operations, and green selling) on the competitive advantage of (Food companies in Damascus and its countryside)?

1.3 Study hypotheses:

The first main hypothesis:

- There is a statistically significant effect of green supply chain management practices on the CA of (Food companies in Damascus and its countryside), and it is subdivided into the following sub-assumptions:
- There is a statistically significant effect of green purchasing on the CA of (Food companies in Damascus and its countryside).
- There is a statistically significant effect of green operations on the CA of (Food companies in Damascus and its countryside).
- There is a statistically significant effect of green selling on the CA of (Food companies in Damascus and its countryside).

1.4 Variables and study model:

This study will include the following variables:

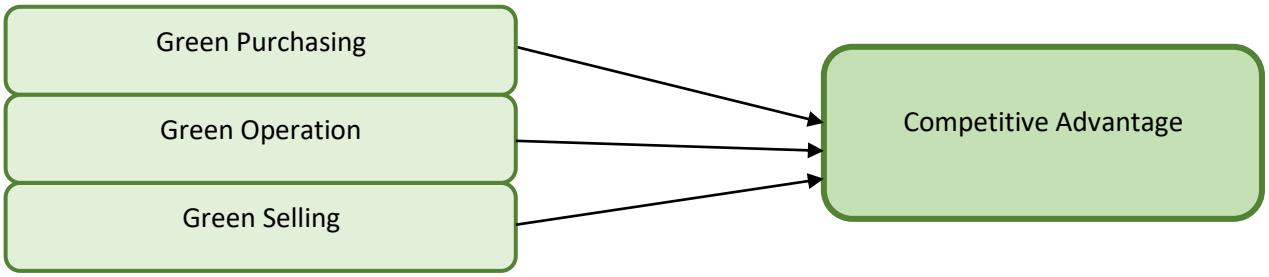
The independent variable: is the green supply chain management practices and it is divided into three sub variables, which are:

- Green purchasing.
- Green operations.
- Green selling.

The dependent variable: the competitive advantage of (Food companies in Damascus and its countryside).

The relationship between the variables can be represented according to the following figure.

Figure No. (1-1) The relationship between the variables



Source: Prepared by the researcher

1.5 Study Significance and Importance:

The importance of this study stems from the modernity and vitality of the subject of green supply chains and their role in raising performance as well as achieving new competitive advantages considering the environmental requirements to achieve sustainable development. Despite the importance of this topic, the research and studies related to it are very few in the Arab countries and even rare in the Syrian state.

Environmental awareness of customers (green consumption) due to the spread of pollution and diseases, so competition through the adoption of the green economy to improve the image of the institution and achieve competitive advantages has become one of the most important issues that companies must consider.

Presenting an integrated framework for the relationship between green supply chain management practices and the dimensions of competitiveness in the companies under study, in a way that helps the company's management to stimulate to achieve competitive advantage.

The results of this study can be used to provide a sound recommendation to (Food companies in Damascus and its countryside) managers about the impact of green supply chain practices on competitive advantage and motivate them to develop appropriate strategies for their organizations, which contribute to creating and enhancing customer satisfaction and loyalty.

1.6 Study objectives:

- Defining the extent of (Food companies in Damascus and its countryside) interest in implementing GSCM activities.
- Studying, determining, and analysing the relationship between the green supply chain management and the competitive advantage of the Food companies in Damascus and its countryside) company.
- Providing a new study in the field of the GSC that may help the (Food companies in Damascus and its countryside) company make a change in the traditional methods of supply chain management based on the results obtained, and encouraging it to effectively implement GSCM activities.
- Provide a theoretical framework about the impact of GSC on CA which will support academics research line.

1.7 Study procedures:

1.7.1 Curriculum:

The researcher will adopt the quantitative approach to collect the necessary data for the study as a basic method for carrying out this study, in addition to the deductive method as well. The thinking will be based on starting from the general to the specific, meaning that the theory that talks about the relationship between GSCM and CA in (Food companies in Damascus and its countryside) will be transferred to specific hypotheses that can be tested, and then data will be collected and analysed, then based on the results, the hypotheses will be either rejected or accepted.

1.7.2 Society and Sample of Research:

Society Research: Food companies in Damascus and its countryside.

Sample of Research: 173 employees of food products companies in the city of Damascus and its countryside.

1.7.3 Methods of collecting and analysing study data:

The researcher reviewed the data and instructions related to the topic of research in order to identify and determine the green supply chain management activities to be studied. Then the researcher will conduct a questionnaire through which the data of the research sample is collected and analysed, and hypotheses are tested using statistical programs and methods that are suitable for this purpose.

The study will depend on two main sources to obtain the data:

Secondary sources: which aims to obtain the secondary data necessary to achieve the objectives of the research. The researcher will depend on the description of the study problem, its objectives, and research hypotheses on articles, books, research, publications, websites, and reports related to the subject of the study.

Primary sources: collecting the required data by distributing a questionnaire to the (Food companies in Damascus and its countryside) employees.

1.7.4 Study limitations:

Human limitations: (Food companies in Damascus and its countryside employees) within the territory of Syria.

Time limitations: from 1-9-2021 till 30-9-2022

Scientific limitations: The study aims to investigate the impact of green supply chain management activities (green purchasing, green operation, green selling) on the company's competitive advantage.

1.8 Previous studies:

First: Studies related to green supply chain:

- **Study (Wu, Dunn, & Forman, 2012) titled:**

A Study on Green Supply Chain Management Practices among Large Global Corporations

This study aimed to understand the current status of green supply chain management practices among the world's largest corporations, and examine the ways for these giant organizations to adopt green concepts and practices and how to implement them, and shed light on the different trends of environmental management for those organizations to bridge the gap between what has been accomplished in this field, and what we need to accomplish in the next stage.The study concluded that there are some visions of the extent to which large corporations are preoccupied with green supply chain practices, and the study showed that organizations are making great efforts in the environmental field, and the study inferred that there is a positive change in the development of global organizations in terms of introducing and integrating environmental standards in their strategies and daily practices.

- **Study ((Rajan & Francis, 2017) titled:**

TO ANALYZE THE CONCEPT OF GREEN SUPPLY CHAIN MANAGEMENT IN PAPER INDUSTRY

The study aimed to determine the practices that are used in the paper industry using green supply chain management and to know how to overcome the problems arising in the paper industry. The study concluded that the partnership between green projects and customers is positively related to quality, flexibility and environmental performance, and that the partnership between green projects and suppliers is linked to improving executive performance.

Second: Studies related to competitive advantage:

- **Study (Cegliński, 2017) titled:**

THE CONCEPT OF COMPETITIVE ADVANTAGES. LOGIC, SOURCES AND DURABILITY

This article aims to present several theoretical assumptions of the concept of competitive advantage and the main problems connected with the same. The article outlines important issues, that are discussed in the management sciences field, like sources of competitive advantages, and character of the durability of competitive advantages in the modern unstable business environment.

- **Study (Flatt & Kowalczyk, 2008) titled:**

Creating Competitive Advantage Through Intangible Assets: The Direct and Indirect Effects of Corporate Culture and Reputation

It aimed to communicate how to achieve competitive advantage through intangible assets and to know the direct and indirect impact imposed by corporate culture and reputation. The study was conducted on 154 organizations within seven industries in the United States of America. The study found that the organizational culture is not the only factor that enhances the financial performance of the organization, but that the organizational culture is closely related to organizational reputation. The study recommended the need to achieve a competitive advantage by activating the practice of modern strategies in the institution.

- **Study (Kearney, 2013) titled:**

Creating Competitive Advantage Through the Supply Chain: Insights on India. CSCMP India

This study aimed to explore the impact of the supply chain on achieving competitive advantage, and its impact on the performance of organizations in India. To achieve the goal of the study, the researcher conducted interviews with 30 professionals from various industrial sectors in India, and the results of the study showed that the supply chain helps organizations achieve high competitiveness compared to other organizations. The study recommended the need to apply supply chain practices, which help to develop the performance of organizations, which, therefore, will be positively reflected in increasing the competitive advantage.

Third: Studies related to green supply chain and competitive advantage:

- **Study (Markley & Davis, 2007) titled:**

Exploring Future Competitive Advantage Through Sustainable Supply Chains

It aimed to identify the potential competitive advantages that organizations can create through GSCM practices. The study concluded that sources of competitive advantage for the organization are becoming scarce and new potential areas of advantage must be explored.

- **Study (Tan, Tan , Zailan, & Shaharudin , 2016) titled:**

The impact of green supply chain management practices on firm competitiveness

The study aimed to find out the effect of GSCM practices on the competitiveness of the enterprise, so a sample was taken from 144 factories in Malaysia. The study concluded that both green purchasing and green production have a direct impact on the competitiveness of the enterprise.

Second Chapter: Supply Chain Management

2.1 The concept of supply chain management:

In the last ten years, logistics has become a dashboard at the corporate level. With the continued development, economic progress and the emergence of supply as an important function in the past few years, the importance of supply management has increased, and its operations have branched out.

Many companies have recently resorted to applying the supply chain management system to raise the efficiency and effectiveness of supply activities to ensure the supply of raw materials and the production of final products in a smooth manner and without delay, as companies today face many challenges both in their internal work environment on the one hand and in their external work environment on the other hand. The external pressures are represented by the pressures of competition by companies located in the local and global markets, with the need to adhere to governmental laws in the countries in which these companies operate with regard to environment protecting, as well as maintaining consumer satisfaction.

Because of the great importance of the concept of supply chain management in general and green supply chain management in particular, there is a large group of researchers who have studied the concept of green supply chain management from different points of view, where we will discuss later a set of definitions of green supply chain management, but before defining management of the supply chain green supply we will illustrate the concept of supply chain management in general.

The concept of supply chain management deals with all activities responsible for the movement of raw materials and parts from suppliers and their movement during the production process, as well as the movement of finished products towards the final consumer. (Saber, 2007)

Supply chain management has been defined as the process of planning, implementing and controlling supply chain operations for the purpose of satisfying customer as efficiently as possible, as supply chain management

extends from the supply of raw materials, their storage and the production of finished products, thus, supply chain management extends from the origin point to consumption point. (Oliver and Webber, 1982)

Supply chain management is also defined as managing relationships with all parties in order to maximize the value provided to customers and extract a sustainable competitive advantage (Borzarth and Handfield, 2008). So, it can be said that supply chain management includes planning, control and coordination between a group of organizations in an integrated manner in order to achieve common goals aimed at satisfying the customer in the best possible way to expand the market share in light of the transition of competition between companies to competition between supply chains, where failure in the management of supply chains can lead to delays in production processes and consequently delays in the delivery of final products to customers, which affects the reputation and sales of companies.

(The Supply Chain) is defined as an integrated group of functional works that are repeated several times through specific channels, by transforming raw materials into final products. (Ghoneim, 2006).

As (Mahbashi, 2010) defined supply chain management as an integrated range of activities and practices that start from the activities of obtaining inputs through the internal processes responsible for converting the inputs into finished products ending with the activities of delivering products or services to the customer through distribution networks and marketing channels. On the other hand, supply chain management from the point of view of the Global Supply Chain Forum (Global Supply Chain Forum, 2007) means that it is the integration of basic business processes through the primary supplier that supplies products, services and information that achieve added value to customers.

As defined by (Lambert, 2005) it is a network of companies or independent business units that extend from the first supplier to the final customer and cooperate with each other to achieve common goals, which leads to benefits for all parties in the chain.

Bagchi (2002) defines it as an integrated set of processes and procedures that contribute to supporting companies and activating commercial practices that link sellers and buyers in the market.

(Chopra, 2004) defines supply chain management as the dynamic flow of information, products and funds continuously between the different stages and includes all chain partners, directly or indirectly, in order to fulfill customers' desires.

Through the above definitions, supply chain management relates to three stages, first stage is the transfer of raw materials from the supplier to manufacturers, second stage is the movement of raw materials through the production process, and third stage is the delivery of finished products to customers.

2.2 The main components of supply chain management system:

The main components of supply chain management system according to (Soin, 2014):

A- Logistics (transportation): It includes the process of flowing, moving and transferring materials inside and outside the company's borders, and determining itineraries and movement schedules.

B- Planning: It includes forecasting the volume of demand for the product and cooperative planning between different departments within the organization.

C- Supplier Relations Management: It is to build a strategic partnership with suppliers by developing long-term relationships so that the organization, in partnership with suppliers, can create and develop plans for product design and development, respond to modern technology, and build capabilities that enable the company to be more flexible to meet the demands of markets and customers. The relationship of the organization with its suppliers also contributes to solving the problems faced by one of them because it will certainly affect the other.

The partnership relations should be with the fewest number of suppliers and may sometimes reach only one supplier. These few suppliers must be ready to bear the consequences and responsibilities of the strategic partnership relationship between them and the company.

The relationship between the company and suppliers must be based on mutual trust, credibility and sharing of benefits and risks. Information and training

should be exchanged between the two parties in order to achieve their common goals, and ultimately to satisfy the final customer.

D- Purchasing: It includes central procurement, contacting suppliers, evaluating suppliers, providing strategic resources, and reducing the number of suppliers to the lowest possible number in order to ensure that company obtains privileges from these suppliers in the company's interest.

E- Inventory management: It include sizing and downgrading the appropriate stock, which leads to reducing storage costs and managing assets within warehouses.

F- Manufacturing methods: It aims to reach an optimal way of appropriate cost, adequate quality and production in quantities that suit customers' desires.

G- Requests management: It includes the process of selling to customers and receiving funds in coordination with the Financial Department.

H- Internet that supports supply chain and integration with the entire chain: It means linking the supply chain management to the customer and coordinating within the organization between all departments at all levels, using the Internet and activating electronic commerce.

I- Information systems for supply chain management: It means establishing an information system that includes all the information related to parties' chain with the ability of customers to enter the information system for supply chain management.

J- Customer Relationship Management: It includes the management of customer information and the processes that belong to customers and those dealing with them and aims to establish strategic partnership relationships to increase and improve customer satisfaction. Customer relationship management is an important component of supply chain management. It is the cornerstone for achieving lasting competitive advantage, so through strategic relations with the client, the client always prefers to obtain his needs from the organization that establishes good relations with him, thus increases its sales and achieves more profits and market share. By identifying the desires of customers and working to meet them in partnership with suppliers of the organization, the organization, with participation of suppliers and customers, can reach creativity, development, quality improvement, cost reducing,

flexibility achievement and speed of delivery, so achieving competitive advantage.

K- Indicators and means for managing and improving performance: They include monitoring and following up on the main factors affecting the supply chain and working to optimize the performance of the supply chain, which is a control process primarily aimed at evaluation, improvement, and removal of obstacles and hurdles to optimal supply chain performance.

2.3 Importance of Supply Chain Management:

The benefits of supply chain management for customers are realized when there is a reduction in inventory by transporting products directly to the place of purchase. As for the impact on the resource, it is more difficult to classify it initially as profits, and it can include benefits for both customers and suppliers as follows (Al-Barazi, 2012):

Cost Reduction: One of the main benefits that results from supply chain management in organizations, which helps in creating a competitive advantage between organizations and raising the purchasing power of customers by reducing prices. In order to reach this result, all organizations found it necessary to return to their marketing mix and note the elements that can be controlled and dominated with the aim of reducing costs and increasing effectiveness. It is known to all specialists that there is a marketing mix consisting of four basic elements, which are product, price, promotion and finally place.

In fact, the element represented by place means the physical distribution or the group of costs is represented by transportation cost, cost of stores, cost of operations related to demand as well as information, a cost related to retail, and cost of moving or handling inventory (Al-Kanaani and Al-Ali, 2014).

The process of preparing products and services and preparing them from their origin as raw materials until they are ready for consumption by the customer, requires several stages, this is what the supply chain management performs in practice, so that the company can improve the quality of the purchased materials or services. The stages of the supply chain must extend from the main

suppliers to the final customer. This contemporary view of the supply chain leads to the achievement of strategic and practical benefits, so a competitive advantage can be achieved for all supply chain partners (Obaidat and Shawish, 2001).

The supply chain is a link that begins and ends with the customer. All materials, finished products, information, and deals flow through this ring. It is also a dynamic network of facilities for all companies with different and contradictory goals. Supply chain management is a combination of science and art In order to achieve improvement in the way the company obtains the raw materials needed to produce the product or provide the service and deliver it or ship it to customers. It is used as a description of all the elements and the overlapping processes necessary to ensure the right quantity of the product in the right places at the right time and at the lowest possible cost. (Koch, 2005)

Customer Communication: Supply chain management helps the company to achieve contact with customers and deal with them, because the chain helps the company to achieve this, by identifying the customer's desires, the time when the products are needed, and the speed of delivery of these products. Supply chain management has become an important phenomenon due to the cost constraint through which the company desires to be achieved, and the possibility to take advantage of external opportunities as a result of relationship between the company and its customers and between the company and suppliers. That is, administrative supply chain management is concerned with managing the flow of information, materials, services, and funds through any activity in a manner that maximizes the effectiveness of operations. (Al-Barazi, 2012).

Market value: idealization in the supply chain leads to sales growth, cost reduction, and efficient use of fixed assets. In an efficient supply chain, the right number of products moves quickly towards the market, resulting in high sales. What the customer needs when he goes to buy, he finds it. The stores do not lose any sales that can be sold. (Kim, 2006).

Capital costs: The capital costs in the supply chain, such as the costs of operating factories and warehouses, are minimal in the event of success in managing the supply chain If the demand is greater than the volume of

production, the stock will be at a minimum, which reduces the number of stores needed to serve the customer. (Jurek, 2011)

Capital savings: The effective management of the supply chain maximizes the working capital of the company because the inventory will be directly converted into notes receivable from the financial point of view. This transformation of the inventory will positively affect market value of the company. (Day, 2008) believes that the importance of supply chain management stems from the need to implement it effectively, eventually, there are several issues that push organizations to adopt the supply chain management approach, which are as follows:

1 **-**Need to improve operations.

2 **-**Raising the level of external purchase

3 **-**Reduce transportation costs

4 **-**Increasing the importance of e-commerce

5 **-**Increasing competition pressures and expanding the scope of globalization

6- The complexity of supply chains, hence the need for effective inventory management.

2.4 Requirements for success of supply chain management

The success of the supply chain management requirements as defined by (Ross, 2011) is represented by a set of factors:

• Building trust among members of the supply chain to achieve objectives of the partnership, which leads to achieving mutual benefits.

• Participation and Collaboration.

• Harmonization of the company's systems and operations and building integration among them.

• Activating communications and reducing the distance between all parties.

• Making a change in the company's culture.

• Sharing information and exchanging knowledge.

• Sharing common goals that lead to reduced time and increased efficiency.

Based on the above, the success of supply chain management requires the integration of all areas of chain; suppliers, factories, warehouses, distributors and retail outlets, as well as cooperation, planning and coordination between partners in the supply chain in order to achieve the effectiveness of operations of the supply chain.

Supply chains are referred to as value chains as value is added to products and services as they are delivered from the producer to the consumer. Value or supply chains are the aggregation of the separate business of organizations; they consist of two components for each organization: Supply component and Demand component (Stevenson, 2005).

-The supply component begins with the beginning of chain and ends with the internal operations of the organization.

-The demand component of chain begins at the point where the organization's output is delivered to the current customer and ends with the end customer in the chain.

As for the demand chain, it is sales and distribution as part of the value chain. The vital coordination of value chain is a way of creating and acquiring value, by

structuring and coordinating activities that were previously separate in markets, as well as by effectively interconnecting these activities to perform internal operations for the purpose of developing business network activities. which essentially create new markets (Hinterhuber, 2002).

2.5 Concept of green supply chain management

With growing concerns about environmental pollution in the wake of industrialization in various countries and the exploitation of natural resources is constantly increasing, a common idea has emerged among researchers regarding environmental issues to achieve sustainable development in the supply chain and what is known today as green supply chain management (Shukla, Garg, & Agarwal, 2011).

As the concepts of distribution channels management and supply chains management appeared early in the economic literature in the early twentieth century, one of these concepts is the concept of (Just In Time), the reason for the early main interest in these concepts such as (Supply Chain Management & Just In Time) is the desire of companies to develop the efficiency of operations and reduce waste. The goal of reducing waste is not for the sake of preserving the environment, but for purely economic reasons, increasing waste means increasing losses for companies. (Lai & Cheng, 2009).

The trend towards a green economy has made Green Supply Chain Management (GSCM: Green Supply Chain Management) a sustainable development strategy in today's competition, which aims to simultaneously achieve financial benefits and reduce environmental risks. (Hajikhani, Wahat, & Idris, 2012)

Customers are the main stakeholders in the green supply chain. The spread of a culture of green consumption increases pressure on organizations to reduce negative impacts in their activities (Freeman 2010), because the challenge ahead is to develop a sustainable global economy. (Hart, Arnold, & Day, 2000)

Today's competition in the modern business environment requires outstanding performance of institutions in terms of financial and non-financial

(environmental) and this is the combination of all parties to the supply chain (suppliers, institution, customers and stakeholders).

Studies and research over the past 15 years seem divided between views on whether there is a win-win situation or a trade-off between environmental and financial performance in green supply chain management. (Seuring & Muller, 2008)

Thus, it can be said that green supply chain management is a modern management model that integrates environmental awareness and effective use of resources to achieve the best performance that enables the organization to compete under corporate governance and adopt the principles of sustainable development, which gives it competitive advantages in the light of customer awareness and spread of a culture of green consumption. Organizations can also enhance their competitiveness through improving their environmental performance by complying with rising environmental regulations and the concerns of their customers and mitigating the environmental impact of their production and service activities. (Montabon, Sroufe, & Narasimhan, 2007)

It is worth noting that when supply chains were designed in the past decades, they did not consider environmental pressures and the cost of fuel and energy, but now companies are resorting to designing long and complex supply chains to reduce transportation costs and reduce carbon emissions resulting from the movement of materials over long distances. It has become necessary for companies to take all design and implementation measures in supply chains to mitigate the phenomenon of carbon emissions and to preserve energy sources as well as sources of raw materials, and thus implement green or sustainable supply chains through the process of using environmentally friendly inputs and transforming these inputs through certain activities and processes that can improve products or lead to their recycling within the existing environment; these processes lead to development of the outputs that can be obtained, such as obtaining recyclable materials at the end of project life, so an integrated green supply chain can be established (Aref et all, 2005).

Green supply chain management can be defined as the addition of the green component to supply chain management which stems from increasing environmental awareness along with the competitiveness drive of enterprises. The environmental awareness has become evident throughout the supply chain

from green design (design and engineering), green purchasing (purchasing of environmentally sound materials), good environmental management (internal performance measurement, pollution, and prevention), environmentally friendly packaging and transportation, to various end-of-life practices from reuse, remanufacturing and recycling.

Green supply chain management is defined as the process of integrating environmental concerns into supply chain management practices, including reverse logistics. It is the application of environmental management principles to a full range of activities across the entire customer demand cycle including design, procurement, manufacturing, assembly, packaging, logistics and distribution. (Sarkis,2011). In other words, incorporating environmental thinking into supply chain management including product design, sourcing and selection of materials, the manufacturing process, final delivery of products to consumers, and managing products after their useful life (Seman, 2012).

Environmental protection is added as an important factor during supply chain management that must be taken into consideration, so green supply chain management is defined as taking into account environmental considerations from the stage of product design, testing and sourcing the raw materials that will enter into production of the product until delivery of the final product to the customer and provide after-sales services (Seman et all, 2012).

That is, the integration of environmental concerns into management of supply chain to include activities associated with the transfer and flow of goods or services from sources of raw materials to final consumers including the integration of internal and external activities of the enterprise. (Bowersox, Closs and Helferich, 1996).

The following is a table showing a set of definitions of the concept of Green Supply Chain Management (GSCM) and how this concept has evolved over time (Martinez & Mathiyazhagan, 2020).

Author	Definition
Green et al, (1997)	Green supply chain management is a method for integrating innovation and marketing within an environmental context.
Min & Galle	Green supply chain management is building an

(2001)	environmentally sustainable product, developing reusable product packaging with reducing waste through product recycling solutions and building an environmentally sensitive organizational culture.
Seuring et al, (2011)	Supply chain management is the process of dealing with the flows of materials and information inclusive of the cooperation between companies along the supply chain aimed at sustainable economic and social development.
Sarkis (2012)	Green supply chain management is the application of green practices along the supply chain to functions such as purchasing, production and selling counting at the strategic, tactical and operational levels.
Andic et al, (2012)	Green supply chain management is the practice of eliminating or mitigating the negative effects of supply chain on the environment.

Since supply chain management is the process of overseeing materials, information, and finances as they move from supplier to manufacturer to wholesaler to retailer to consumer. Green supply chain management involves traditional supply chain management practices that incorporate environmental criteria or concerns into organizational purchasing decisions and long-term relationships with suppliers. Thus, green supply chain management works to integrate the environmental idea into every stage of the product and service in the supply chain (Bhattacharjee, 2015).

2.6 Strategies for dealing with corporate social responsibility:

Below is a table showing the differences between traditional supply chains and green supply chains by (Woodburn and Whiteing, 2010):

Aspects of Comparison	Traditional Supply Chains	Green Supply Chains
Cost Factor	Many producing companies seek to use logistics services in order to achieve the lowest possible cost by all possible means to reduce transportation and packaging costs. Thus, maximizing the level of profitability, even if this is at the expense of having some effects on the environment (i.e. characterized by the low economic cost of the production, transportation and distribution stages, and the high environmental cost).	Implementation of green supply chain practices is relatively economical than traditional supply chains in order to maintain compliance with the environment and its requirements. (i.e. it is characterized by a low environmental cost and a relatively high economic cost as a result of the application of costly environmental means)
Time and Precision Factor	Traditional supply chains aim to create flexible and efficient distribution systems by delivering raw materials or merchandise on time without causing any waste (breakage or damage) or delays.	Traditional supply chains agree with green supply chains to achieve a good distribution system, but traditional supply chains excel by achieving higher rates of accuracy in delivery in the shortest possible time.
Exploitation of	Traditional supply chains	Green supply chains aim to achieve

Land and Resources	consume large areas of land and non-renewable energy sources, especially in production and storage areas, which leads to their depletion over time.	the least possible use of land as a limited resource by reducing production, shipping, warehousing and marketing spaces - in addition to exploiting renewable energy sources and advanced technology during the transportation, shipping and warehousing stages to ensure the sustainability of the logistics area and meet the requirements of future activities
Networks	Traditional supply chains rely on advanced transportation networks to achieve good systems for distributing products, but at the same time they cause congestion on the hubs located on them, in addition to contributing to raising pollution rates, which negatively affects the surrounding environment.	Green supply chains manage transportation systems to be environmentally compatible, efficient and speedy, to reduce congestion and pollution rates.
Pollution Rates and Waste	The transportation system within the traditional supply chains has a negative impact on the environment due to the extent to which it causes a high percentage of carbon dioxide in the air resulting from the use of traditional means of transportation from trucks and ships ... along with the high percentage of waste products that	Green supply chains use less polluting transportation systems in addition to reusing waste again in production processes. Many previous studies have shown the importance of applying the green dimension in supply chains, which enables recycling of production waste and its inclusion in production processes again through reverse logistical activities. Unlike traditional supply chains, which are limited to front-end activities that organize distribution

	need to be disposed and recycled	processes from production to consumption only
Storage	Traditional supply chains are characterized by low storage space because products are transported without wasting storage time, using appropriate transportation systems on the available roads, in addition to using part of the public spaces designated for roads for temporary storage, which affects the high rate of congestion on the roads.	Green supply chains allocate specific places for storage away from the spaces designated for the roads to reduce congestion with the least possible space and the lowest storage time to achieve the continuous movement of products.
Use of Information Technology	The development in information technology has contributed to creating a new type of trade, which is technological trade within the logistic areas, which consume higher rates of energy, in contradiction with the requirements of compatibility with the environment and its resources.	Green supply chains target the management and employment of the information system in order to achieve efficiency for the logistics area with the least use of non-renewable energy in addition to its inclusion in the exchange of information and the organization of logistical activities, transport operations, warehousing and waiting.

Thus, green supply chains are characterized by a set of advantages that cover the failures of traditional supply chains, including (exploitation of renewable energy sources - efficient use of land and available resources - efficiency in the process of transportation and storage without damaging roads or issuing

pollution - managing waste and incorporating it into new production processes again - achieving the lowest rates of pollution, noise and congestion - reducing the time and spatial distance from production stages to consumption).

Despite the previous advantages, the application of green supply chains in many countries has been associated with a high economic cost to achieve the required environmental quality, compared to traditional supply chains, which seek to bring costs to the minimum, and therefore it is necessary to formulate an integrated environmental framework that achieves environmental suitability on the one hand, and reduce the economic cost as much as possible on the other hand.

2.7 Benefits of adopting green supply chains:

Supply chain management plays a pivotal role in achieving the competitive advantage of companies (Mudgal et al, 2009), since green supply chain management is a process of integrating environmental requirements with the concept of supply chain management (Govindan et al, 2013) therefore, there is a set of benefits for companies to adopt the concept of green supply chains according to (Rifai, 2016):

-Rationalizing the consumption of non-renewable resources and reducing waste.

-Improving productivity by reducing disease incidence and maximizing human health according to the Human Well-Being Index

-Maximizing the psychological aspect of the worker himself, as he feels that his work helps the environment and has a high value in society

-It contributes to reducing the unemployment rate by creating new and unique projects that provide job opportunities for individuals in different fields.

-Building the company's brand as being environmentally friendly and applying the concept of corporate social responsibility.

-Economic benefits through increased efficiency. It is achieved by reducing waste and reducing corporate expenses in terms of handling and waste disposal fines.

-Competitive advantage through innovation: which enhances production efficiency by the use of clean technology, practical innovations and waste reduction.

-Improving product quality: green supply chains help maintain relationships between suppliers and buyers, which leads to greater control over product quality.

-Improving the company's public image: by consumers, investors, and employees respond positively to companies with a reputation for environmental performance.

2.8 Green Supply Chain Management Practices:

Green supply chain management applications may include analysis of a network of supply chains, organizational levels and the global distribution of firms. Whereas, green supply chain management is typically defined from the point of view of product life cycle in organizations, and this point of view includes:

- Internal environmental management.
- External environmental management of supplier and customer

According to (Geng et al, 2017), supply chain management includes 5 basic elements:

• Green Purchase GP

• Design for the environment ECO

• Customer cooperation CC to implement environmental requirements

• IR Investment Recovery

• Develop the internal environmental organizational performance IEM

Green supply chain management practices mean all activities and processes that are oriented in environmental dimensions, whether they are internally oriented practices such as internal environmental management and environmentally friendly design, or they are externally oriented practices such as green purchasing, customer cooperation and investment recovery (Zhu et al, 2005).

Researchers vary in their definition of the practices that should be included in green supply chain management, and the following table illustrates the green supply chain management practices contained in some of the previous studies.

Study	Green Supply Chain Management Practices
Zhu and Sarkis ,2004	Internal environmental management, external green supply chain management practices, eco-friendly design, and investment recovery
Zhu et al .,2008	Internal environmental management, green purchasing, cooperation with customers, eco-friendly design, and investment recovery.
Eltayeb and Zailani ,2009	Green purchasing, eco-friendly design, reverse logistics.
Ninlawan .Seksan,Tossapoland Pilada,2010	Green purchasing, green manufacturing, green distribution, and green logistics
Eltayeb , Zailani ,and Ramayah ,2011	Eco-friendly design, green purchasing, environmental cooperation with suppliers, environmental cooperation with customers, and reverse logistics.
Green et al ,2012	Internal environmental management, green information systems, green purchasing, cooperation with customers, eco-

	friendly design, and investment recovery.
Perotti , Zorzini , Cagno and Micheli ,2012	Green supply, distribution and transportation strategy, warehousing and green buildings, reverse logistics, cooperation with customers, investment recovery, eco-friendly packaging and design, and internal management.
Shi ,Koh ,Baldwin and Cucchiella, 2012	Green purchasing, eco-design, green distribution.
Lee , Kim and Choi ,2012	Internal environmental management, green purchasing, cooperation with customers, and eco-friendly design.
Laosirihongthong et al ,2013	Green purchasing practices, product-related eco-design practices, packaging-related eco-design practices, reverse logistics practices, and environmental legislation and regulations.
Diabat et al ,2013	Internal environmental management, green purchasing, environmental cooperation with customers, investment recovery, reverse logistics, and eco-design.
Chien ,2014	Green manufacturing practices, green purchasing practices, green innovation practices, green service practices.
Chin et al ,2015	Green purchasing, green manufacturing, green distribution, and green logistics.
Diab et al ,2015	Internal environmental management, customer cooperation, green purchasing, eco-friendly packaging and design, warehousing and green building.

Luthra, Garg and Haleem,2016	Green design practices, green purchasing practices, green production practices, green management practices, green marketing practices, green logistics practices.
Younis et al ,2016	Eco-friendly design, green purchasing, ecological cooperation, reverse logistics.
Zhu et al ,2016	Internal environmental management, green purchasing, cooperation with customers, eco-friendly design, investment recovery.
Fang and Zhang ,2018	Internal environmental management, green purchasing, customer cooperation, investment recovery, and eco-friendly design.
Namagembe et al, 2018	Green purchasing practices, eco-friendly design practices, cooperation with customers practices, investment recovery practices, internal environmental management practices.

In the light of research writings and literature that dealt with green supply chain management practices, it is evident that there are differences between authors and researchers in their definition of green supply chain management. The most common green supply chain management practices will be selected in the studies which can be illustrated below:

1. Internal environmental management:

Internal environmental management refers to providing all kinds of support and commitment by senior and middle management managers that may be necessary in order to successfully implement green supply chain management practices, and to achieve environmental sustainability as a strategic organizational necessity (Zhu et al., 2005).

Internal management is one of the key success factors for business organizations to implement green supply chain management practices. Pressure from current employees and support from environmentally motivated senior leadership may contribute to increased interest in environmental issues and awareness of the environmental risks involved, which contributes to the adoption and implementation of environmental practices (Luthra et al, 2016).

Internal environmental management contributes to improving the environmental performance of the organization by investing in environmental management programs such as ISO 14001 environmental certification systems, information technology, and total quality in environmental management (Namagembe et al, 2018).

(Lee et al, 2012) argues that to successfully implement green supply chain management practices such as green procurement and eco-friendly design, industrial organizations need not only good internal environmental management but also external cooperation and coordination with suppliers and customers in their supply chain.

The internal environmental management is defined procedurally as the commitment and support necessary on the part of senior managers and the middle level in the organization to implement environmental requirements and achieve total quality in its management of the environment and to develop programs for environmental compliance and review and investment in management systems (Namagembe et al, 2018).

2 .Green purchasing:

Green purchasing indicates that materials and products purchased from suppliers achieve the organization's environmental objectives such as reducing waste sources or reuse, reducing wasteful use of the organization's resources, and the possibility of replacing materials purchased from suppliers (Eltayeb and Zailani, 2009).

Green purchasing means the extent to which the purchasing and supply manager cares about sustainability in the process of purchasing inputs from suppliers, in addition to other traditional purchasing criteria such as cost, quality and delivery on time (Eltayeb and Zailani, 2009).

Green purchasing addresses some issues related to reuse, recyclability, waste minimization, replacement of environmental materials, and reduction of hazardous materials. Therefore, organizations have realized the importance of the environmental performance of suppliers to ensure that the materials purchased are eco-friendly (Diabat et al, 2013)).

Green procurement involves an organization's assessment of the environmental performance of its suppliers, which requires suppliers to take measures to ensure environmental quality in their operating systems (Shi et al; 2012).

Procedurally, green purchasing is defined as cooperation with suppliers in order to develop environmentally sustainable products through four axes: supplier evaluation, assistance to supplier to follow environmental practices, cooperation with supplier, and evaluation of purchased materials (Namagembe et al, 2018).

According to (Awni and Agha, 2012), there is a set of criteria and principles related to green purchasing, where the green purchasing criteria assume that the purchased materials meet the following criteria:

• The supplier must have an environmental management system in accordance with international standards (to have obtained the ISO 14001 certificate).

• Not to use in the process of extraction, processing or manufacturing environmentally prohibited substances.

• The final products do not contain prohibited substances

The set of principles associated with green purchasing are:

- Making environmental purchasing a part of the company's fruitful operations.

- Understanding the environmental issues related to the company and its supply chain.

- Developing procurement policies that address environmental issues.

- Formulating environmental standards by which suppliers are evaluated.

The importance of green purchasing is that it helps companies to (Al-Taie et al., 2012):

• Improving the safety and health of employees and customers.

• Reducing pollution of natural resources and conserving energy.

• Developing new and more eco-friendly products.

• Stimulating new markets for recycled materials, creating jobs and improving awareness of caring for the environment.

• Providing potential cost savings.

• Compliance with environmental laws and regulations.

3. Cooperation with customers:

Environmental cooperation with customers includes direct intervention by the organization to improve the environmental performance of its customers. It includes the exchange of technical information between the organization and its customers in order to plan and set environmental improvement goals to reduce the environmental impacts associated with the flow of products in the supply chain (Eltayeb, et al. al, 2011).

The primary activities of environmental cooperation with customers are customer education, customer support, and joint ventures with the aim of improving the environmental performance of customers in order to develop eco-friendly products (Diabat et al, 2013).

(Namagembe et al, 2018) believes that environmental cooperation with customers may contribute to improving environmental performance of the organization by providing the necessary environmental information for the process of creating eco-friendly products and also contributing to reducing the environmental impacts caused by practicing internal and external logistics activities in the supply chain. Cooperation with customers is also procedurally defined as working with customers to design eco-friendly products, and to apply clean and eco-friendly production methods that produce environmentally sustainable products with attention to green packaging.

4. Eco-friendly design Eco-design:

It indicates to design compatible with environment to reduce the environmental impact of a product. It is sometimes called design for the environment (Shi et al; 2012). It is also called green design (Luthra et al; 2016).

Eco-friendly design refers to actions taken during product development that aim to reduce the environmental impact of a product throughout its entire life cycle – from sourcing raw materials to manufacturing and use of the product to disposal at the end of its life cycle – without sacrificing other key product criteria such as performance and cost. (Younis et al, 2016).

Green or eco-friendly design is closely related to environmental risk management, product safety and security, pollution prevention, resource conservation, and waste management (Diabat et al, 2013)).

As a result, eco-friendly design is considered a green supply chain management practice because it integrates environmental aspects into the product design process taking into account the entire flow of a product within its supply chain. This consideration is very important because the majority of environmental impacts resulting from the manufacture, consumption and disposal of a product are direct results of decisions made at the product design stage (Eltayeb and Zailani, 2009).

Eco-friendly design is procedurally defined as designing products to save energy and raw materials in a way that allows reusing, recycling and reducing the risk of their production processes and stages, reducing storage spaces with saving energy during transportation (Ninlawan et al 2010).

5. Investment Recovery:

Investment recovery refers to an organization making strategic use of recycling, redistribution, resale, and similar technologies to obtain greater value from surplus materials and products. That is, investment recovery is a method of converting surplus assets into revenue by selling assets in excess of operating needs, and reducing storage space (Fang and Zhang, 2018).

Investment recovery also means that products are collected from end users and returned to the factory for disposal (i.e. repair, remanufacturing or recycling) in order to reduce manufacturing costs (Diabat et al, 2013)).

Investment recovery requires selling surplus stock of products and raw materials, selling damaged, production waste, equipment and machinery in excess of operating needs (Zhu et al., 2008).

6 .Green IT:

Green information technology or the so-called green computing is abbreviated as (study, practice, design, manufacture and efficient use of computer resources), by getting rid of computers and all related sub-systems such as: printers, storage devices, networks and communication systems efficiently and effectively with the least impact on the environment.

It can be defined as follows:

- It is the framework that contains a set of components (procedures - individuals - devices and databases - software - communications) that work together in a coherent and integrated manner according to basic processes (inputs - processes - outputs - feedback) in order to collect, follow-up, monitor and review practices and environmental initiatives, with the aim of providing information of appropriate quality, at the right time, that is integrated and closely related to the environment with displaying it on the company's website, which helps both the organization and stakeholders including customers, suppliers and consumers in making their decisions (Green et al,2012).
- It is all policies and regulations related to the green use of IT equipment and devices in organizations (Mohammed, 2017).
- It is initiatives and strategies that support the environmental footprint of technology, as this results in reductions in energy, including: appliances, electricity, fuel, and paper (Foreign, 2020) Consequently, many IT companies have started developing and offering green IT compatible products.

With regard to green information technology, (Yu, 2015) study concluded that there is a direct positive relationship between the implementation of

information technology and the dimensions of supply chains integration represented in (internal dimension, customer dimension, supply chain dimension).

7. Green storage:

Green warehousing is defined as the process of integrating environmental thinking within warehousing activities in order to achieve the preservation of stocks from damage and loss, and to arrange the store in a way that facilitates access to inventory without the occurrence of work injuries with the importance of using handling tools with a lower environmental impact, and optimizing the defective production through re-using, re-manufacturing or re-assembling, with the necessity of selling idle stocks, scrap and unused equipment (Chan et al; 2012).

Green storage is defined as all storage activities that reduce the negative effects on the surrounding environment, by less use of energy sources and good use of raw materials and finished products during their removal and disposal. (Gyu,2016)

In addition to the necessity of observing all the basic rules during the storage process in terms of coding and providing equipment and scientific facilities for disbursing the stored materials according to the priorities of their entry into the warehouses to prevent damage, as well as creating the appropriate conditions to preserve the materials from damage and breakage, or to reduce the injuries of workers inside the stores. (Lynda, 2013).

In this regard, (Beheshti, 2010) study indicated that the benefits of the decision support model in the analysis and development of the cooperation environment among the members of the supply chain, has contributed to reducing the cost of inventory, and that the proposed model shows the defects of individual improvement in the integrated supply chain system.

8 .Green production:

Green production is manufacturing planning process, reducing energy consumption, material utilization and reducing waste during the manufacturing

process (lui & Xue, 2012). Green manufacturing is a production process that uses inputs with relatively low environmental impacts. It is highly efficient and generates little or no waste or pollution.

Green manufacturing practices are environmentally and socially responsible practices to reduce the negative impacts of manufacturing activities. At the same time achieving economic benefits. The main goal of green manufacturing is to reduce the environmental impacts of the product by using appropriate materials and technology. Green manufacturing stimulates activities such as reducing material use and recycling (Abdul Halim, 2018).

According to (Wang & Luo, 2010), green production should be considered through the following aspects:

• Green Industry: During production planning process, environmental factors must be taken into account in the first place.

• Productive resources: A higher level of processing technology must be reached and reduction of waste and scrap materials should be considered.

• Enhance humanity in manufacturing: by adjusting working hours and other measures to enhance employee enthusiasm and creativity to increase productivity.

Also (Rehman et al, 2016) consider that green packaging should be recyclable, biodegradable, reusable, or less environmentally harmful compared to the packaging materials used by competitors. Green packaging saves companies costs that were incurred by over-packaging. With green packaging, companies have become dependent on three elements (cost reduction, reusing, and recycling) in order to reduce costs and have low environmental impacts.

We can summarize the benefits of green manufacturing according to (Zappi, 2012):

• Keeping abreast of global developments to modernize production methods using new technologies.

• Managing manufacturing operations and providing equipment and services in a good way.

• Changing the quality of products in terms of technical quality and environmental safety to ensure increased demand for them.

• Replacing polluted raw materials with eco-friendly ones.

• Finding additional economic resources as a result of recycling waste in industrial processes or reusing in the production of other products, which leads to lower costs.

• Improving marketing opportunities, raising competitiveness and achieving a safe environment.

• Ensuring ease of implementation of environmental laws and legislations.

• Reducing negative environmental impacts and the resulting legal and financial liability.

• Reducing the quantity and toxicity of emissions and waste generated by industries.

• Reducing the harmful effects during the production cycle, starting with the use of this mechanism to preserve raw materials and ending with the disposal of what is not suitable for reusing and recycling of waste.

• Taking into account environmental considerations when designing, operating and implementing a production plan.

9 .Green Marketing:

Green marketing includes a commitment by the organization to deal with eco-friendly products (i.e. products that do not harm society and environment) and to conduct marketing activities in a way that reflects the organization's commitment to environmental responsibility by adhering to specific controls to ensure the preservation of environmental nature (Rifai, 2016).

(Nathan & Mathi, 2013) defined green marketing as all activities concerned with identifying and anticipating the needs of the consumer and society and working to satisfy those needs in a way that leads to profit for organizations and preservation of environment in a correct manner while preserving the resources of society for future generations.

(Singh, 2014) defined it as a holistic concept includes production, marketing and focus on green products manufactured with green technology do not cause harm to environment that are naturally grown or made with non-toxic,

biodegradable, recycled or reusable products with eco-friendly packaging or cover.

10. Reverse logistics:

Reverse logistics is the opposite of traditional logistics, as it considers the process of retrieval of products from the point of consumption for recycling and re-manufacturing. In the first stage, the retrieval process takes place through selection and collection of products and their transportation to institutions for re-manufacturing. The second stage includes sorting as an important mechanism for determining which products are to be reused. The goal here is to sort reusable products directly without the need for recycling to lower the costs of making new products.

2.9 Green Supply Chain Strategies:

Some researchers point out that the first emergence of reverse supply strategies was in the late nineteenth century with the aim of returning products and containers, direct use of packaging, recycling of materials and proper disposal with minimal toxic effects on environment, so some strategies can be adopted for green supplies to achieve this.

Develop some strategies for green supplies to reduce environmental impacts and dispose and recycle end-of-life products that have a significant impact on the cost structure, some of these strategies, according to (Ibrahim, 2017):

- **Environmental Concern Strategy:**

This strategy includes all eco-friendly practices that achieve a competitive advantage, as organizations focused on moving forward in this direction, which is the activities of eco-friendly supply chain with all the main functions of the organization such as marketing, manufacturing, distribution, procurement and sales to reduce waste, recycling and reuse.

It also achieved a reduction in costs of recycling products as well as reducing waste resulting from packaging and reuse. Green sourcing has gained a lot of momentum in recent years among manufacturers and retailers as it achieves a commitment to community through a commitment to social responsibility. In the same context, one of the environmental considerations is to return

products to their suppliers as the costs of landfilling for waste have become too expensive, forcing companies to adopt advanced packaging technology in a way that makes products more reusable. Finally, the implementation of this strategy will enhance added value, which is manifested in reducing costs on the one hand, and protecting environment and preserving customers on the other.

- **Guaranteed Rebounds Strategy:**

This strategy focuses primarily on products that fail to meet the customer's requirements that have been damaged through supply, as well as its focus on green supply services to balance organization during the return of products from shops to stores of the organization. In addition to providing after-sales services to gain the confidence of consumers. For marketing considerations related to consumer services, it is possible to provide after-sales services and return products that do not meet their desires and aspirations to obtain a new product or repair the damaged product. The process also includes withdrawing products before the end of their life in a way that guarantees designing and implementing proper recycling to achieve many advantages.

Due to the emergence of some laws, companies are obligated to recycle, as is the case in Germany and United States, it is sometimes necessary to carry out these treatments, even if they are an investment at high costs, they achieve maximizing added value as they contribute to reducing pollution and increasing improvement of service provided to the customer. This strategy aims to balance performance and marketing with environmental factors, reduce pollution and conserve energy.

- **Import and Repair Strategy:**

Some organizations take back raw materials or parts of products to achieve a certain increase in profitability. These investments are often expensive, but they shorten transportation and storage costs and thus achieve scale savings.

Under this strategy, we can focus on retrieval of everything that can be used in order to reduce production costs through the recovery of products, components and materials that are returned in production for various reasons (such as raw materials do not conform to specifications, increase in raw materials as well as production waste in production processes). Under this strategy, repair or maintenance services are provided continuously. Repair

operations are carried out either at consumer site or the product is sent to the repair site. Some organizations create a supply chain called a closed supply chain. It is based on the integration of reprocessing and technology by retrieving parts of product with the original manufacturing process to achieve inventory savings of scale on the one hand, and reduced supply costs, on the other.

2.10 Steps to implement green supply chain management:

(Sheikh, 2013) says that companies that want to transform the traditional supply chain into a green supply chain are required to increase their maturity and environmental awareness, and they should also implement the following steps:

1.Definition: The first step to implementing green supply chain is to check the efficiency of its objectives and their ability to implement green supply chain, Verifying the efficiency of the objectives and having the appropriate techniques to apply this concept, as well as the need to take into account the risk of increasing costs required by process of getting rid of the increasing radiation and waste.

2.Planning: The second step of implementing green supply chain. This step indicates that companies are working seriously in disclosing and planning their goals, represented by achieving profits on the one hand and maintaining a clean environment on the other hand; this requires the company to work on developing plans centered on the type of technology that It will be used and planned to obtain all associated data.

3.Decision: It is taking special decisions. This step requires loyalty from all employees of the company to this lofty goal of preserving the environment. In addition to the need for senior management to support this idea and carry out market study programs and data collection in order to identify the requirements of customers and identify the side effects on environment for these products, as well as, taking advantage of practical frameworks and contracting with competencies from other companies.

4.Application: This step represents one of the most important steps in the implementation of green supply chain, as all training and educational programs are carried out for all administrative levels until the self-taught philosophy required by the green supply chain process, as well as the necessity of spreading awareness among employees towards this concept and achieving team spirit in support of this lofty goal of the company, therefore spreading this lofty message among companies requires them to have basic real knowledge that application of green supply chain is not only the ability to manage technologies and energy, but this is related to the ability on managing and educating human resources.

5.Monitoring: Maintaining all the achievements that have been achieved through the previous steps requires working seriously to carry out continuous monitoring and evaluation processes. It is not enough for customers to testify that the company takes into account or works to preserve the environment, however, the most important criterion is the company's ability to obtain the ISO 14001 certificate and work seriously to preserve it.

2.11 Stages of Green Supply Chain Management:

Stage1: Environmental Design includes:

a) Environmental awareness in design:

it is substitution of environmentally harmless materials instead of harmful materials. Despite the fact that this decision is logical, it faces difficulties in design if the harmless material is scarce, therefore it is difficult to obtain in appropriate quantities or requires a very high cost that raises final price of the product in a way that consumer may not bear.

b) Forecasting stages of the product life cycle:

It is forecasting the product's consumption of energy and raw materials from the provision of raw materials to its disposal after the end of its life.

Stage2: Environmental implementation:

This is considered one of the biggest challenges of integrating the remanufacturing process into organizational structure of operational processes in the organization.

A - Manufacturing and Remanufacturing:

Reducing Waste: It has its value not only in the scope of manufacturing and remanufacturing but also in all other components of the form such as reverse supply services, waste management and design.

Recycling: It is carried out as a result of compliance with environmental legislation and for economic motives.

Supply services: 95% of the cost of recycling.

Remanufacturing: a set of activities to recover value from a product at the end of its life.

Inventory management: It includes 3 types of inventory:

Products that are returned at the end of their life to be remanufactured.

Recycled products.

Manufactured products.

Production and schedule management:

Traditional methods did not take into account recycling processes yet recently this has been included. Hence, it is a process that must be designed in line with green supply chain management initiatives to reduce negative environmental impact. It is concerned with the efficiency and effectiveness of the product to reduce energy consumption, which ensures the reduction of waste emissions to water and air. This contributes to manufacturing performance. All possibilities should be examined to recycle scrap materials.

B - Design a two-way supply chain "feedback"

1- Assembling: The first stage is to collect products that have expired from different sources.

2- Examination and classification: It may take place during the assembly itself or afterwards.

3- Pre-processing: the integration of information and communication technology.

4- Distribution: Awareness in designing supply networks to take into account the processes of returning the product for re-manufacturing.

C- Waste Management:

1- Source Reduction and Pollution Prevention: It focuses on preventing pollution at its source, whether from products or in the manufacturing process itself, rather than dealing with it after its emission. Prevention is better than cure.

2. Disposal: Green supply chains focus on reducing discarded materials and are useless.

Third Chapter: competitive advantage

3.1 Introduction:

Since the world today is experiencing huge changes at all economic, social, environmental and technological levels, these changes must be reflected in the business environment in which companies practice their activities and operations. This, in turn, led to a change in the conditions and volume of competition between companies at the local, regional and global levels, which prompted companies to pay attention to this competition and seek to increase its intensity day after day, especially in light of the emergence of a large number of competitors.

If limited resources, problems facing supply chains, customer pressures and their continuous and renewable requirements are taken into consideration, companies must pay attention to their competitive capabilities permanently by choosing their appropriate strategy that enables them to stay in the first ranks in highly competitive markets that do not accept weak members. As competition in today's business environment is unavoidable (Kuncoro and Suriani, 2017).

In this chapter of the study, the concept of competitive advantage, its factors and objectives will be discussed, as well as strategies, characteristics, dimensions and types of competitive advantage, in addition to determinants, indicators and methods of judging competitive advantage.

3.2 The concept of competitive advantage:

Defining the concept of competitive advantage has occupied the attention of researchers in fields of economics and business administration since the beginning of the eighties of the last century, due to the different visions of economists from those of business administration scientists, the result was a lack of agreement on the concept of competitive advantage.

This difference is due to the angle from which they have been looked at the competitive advantage, where economists are usually interested in factors that determine competitive advantage of the national economy as a whole, while

the attention of businessmen is focused on competitive advantage of the institution or industry.

The analysis in order to diagnose competitive advantage of the economic institution does not require obtaining historical data only, but rather it assesses the trends and results and compares them with the data of competitors. The process of gaining the competitive advantage comes through appropriate actions in the field of institution's business.

The concept of competitiveness is characterized by modernity and is not subject to general economic theory. The first appearance of the concept of competitive advantage dates back to Chamberlin in 1939, and can also be traced back to Selznick in 1959, who linked advantage to ability.

The concept of competitiveness is distinguished by modernity and is not subject to a general economic theory. Its first appearance was during the period (1981-1987). That experienced a large deficit in trade balance of the United States of America (especially in its exchanges with Japan) and an increase in the size of foreign debts. Interest appeared again in the concept of competitiveness with the beginning of the nineties as a product of the new world economic order and the emergence of the phenomenon of globalization, as well as the general trend of the application of market economies. In general, it is difficult to provide a uniform and accurate definition of competitiveness, due to the difference of views and experience of practitioners in the field (Al-Fadl ,2016).

Michael Porter is the first to develop the theory of competitive advantage, as he designed a special model for measurement based on the partial variables of the economy, considering that competition takes place between organizations. He also set another model depends on the overall variables of the economy based on the understanding that competition is also taking place between countries.

(Porter,1990) believes that the competitive advantage "lies in the characteristics of the company through which it can provide better services (better value) to customers, so it can take the form of lower prices compared to competitors' prices with equal benefits, or by providing individual benefits in the product or service that compensate the imposed price increase clearly. "

(Kotler, 2002) defined competitive advantage as the ability of the organization to work in a manner and way that makes the task of keeping pace with its competitors very difficult in the short or long term.

For (Khalil, 2004), defined competitive advantage as what the organization achieves in terms of superiority over its competitors based on a specific competitive strategy that enables it to achieve the highest quality strategy, whether it is achieved through the cost leadership strategy or the differentiation strategy.

Likewise, (Amanah & Harahap, 2020) defined competitive advantage as "a set of distinct or rare advantages that allow an organization to perform better than competitors' performance, it is difficult for competitors to obtain these advantages in the future." Where a competitive advantage can be found in an organization, if the organization has more profitable activities than competitors' activities (Cegliński, 2017).

In his view (Alma, 2002) that the competitive advantage is the ability of companies to gain and maintain a market share on a continuous basis.

(Toni & Tonchia 2003) also defines a competitive advantage as "the present value of a company's products that exceeds the price value that customers pay as a price for products".

Porter emphasized that study of the economic environment related to organization at the local and international levels represents first step in the analysis of competitiveness. As study of similar organizations and policies surrounding the organization helps to acquire and develop its competitive advantages at the local level while at the international level, the organization must search for an international global strategy that enables organization to follow promotional policies for its various industries so that it can determine the correct way and timing to penetrate international markets and gain a continuing share from these markets.

A competitive advantage can generally be described by the following (Barney, 2001):

1. High value.

2. It leads to the preference of competitors for a certain period, not absolute.

3. It is difficult to copy it because it originates from within the company.

4. It affects consumers and motivates them to buy.

Through the foregoing definitions, the competitive advantage, then, is achieved through the best use of potentials and resources available to the organization and its technical, material and organizational resources, in addition to the capabilities, competencies, knowledge and other capabilities that the organization enjoys, which enables it to occupy a distinguished position in the local and global market alike.

3.3 Objectives of the competitive advantage:

Some goals that the organization seeks to achieve through competitive advantage are the following:

A. Ability to defend the company's market share, in addition to enhancing the company's capabilities, production and marketing capabilities, and improving its relationships with customers (Munizu, 2013).

B. Reducing decision-making risks for senior management of the company (Hosseini et al, 2018).

C. Achieving sustainable company growth by designing competitive business strategies based on (Jones, 2003).

D. Entering a new competitive field such as entering a new market or dealing with a new type of customer or a new type of goods and services (Potjanajaruwit, 2018).

E. Keeping pace with the local and global changes taking place in the business environment (Dash, 2013).

3.4 Characteristics of competitive advantages:

(Dirisu et al, 2013) believes that there are many unique characteristics to competitive advantage, as follows:

1 .Follow a policy of continuous change that seeks to develop the company, improve its performance and maximize its profits.

2. The competitive advantage is characterized by its ability to attract skilled employees who have exceptional capabilities and skills and are able to devise new plans and policies for the company.

3 .One of the most important characteristics of competitive advantage is that it takes into account and pursues innovation in its policy and seeks uniqueness in providing services and goods to customers.

4. Flexibility in designing and implementing plans in line with the changes and transformations taking place in the market environment and in a manner that achieves a good reputation and expansion for company in the target market.

5. Continuing and progressing in achieving goals that the company aspires to and seeking to develop and draw strategic plans with a long-term vision to achieve the company's sustainable excellence and uniqueness.

Generally, there are two groups of competitive advantages, depending on the factors present in the internal and external environment of the organization; these factors can be divided into (Stoyanova & Angelova, 2018):

• Competitive advantages through external factors, including:

1) Competitiveness of the country to which the organization belongs.

2) Competitiveness of the organization itself.

3) Competitiveness of the organization compared to competing organizations.

4) Competitiveness between suppliers.

5) Current competition between alternative products.

6) Possibility to expand the market with new customers.

• As for the competitive advantages through the internal factors related to the organization, include:

1) Organizational structure of the institution.

2) Available resources.

3) Technology used.

4) Organization management.

5) Marketing

6) Organizational effectiveness.

Some of the most important characteristics of competitive advantage are (Sigalas, 2015):

To be continuous and sustainable, meaning that the organization achieves a lead in the long term not only in the short term, as the competitive advantage is a basic concept within the strategic management.

It appears by comparing with competitors or to different periods.

Be flexible in the sense that competitive advantages can be replaced easily and conveniently according to considerations of changes in the external environment or the development of resources and capabilities of the organization on the other hand.

That the use of these competitive advantages be commensurate with the goals and results that the organization wants to achieve in the short and long term.

3.5 Factors for Competitive Advantage:

There are many reasons that made competition a cornerstone of the new business system, which in fact represent the results of globalization and the movement of variables. The most important of these reasons are (Kang & Na, 2020):

1. Companies recognize the importance of achieving customer satisfaction; indeed exceed customer satisfaction by providing innovative products.

2. Customers awareness of companies' importance carrying out their social responsibilities.

3. Easy access to data from the market and the presence of a large number of competitors in market.

4. The flow of research results, technical developments, and the acceleration of various processes of creativity and innovation.

5. With the increase in production capacities, the high levels of quality and the relative ease in entering new competitors in the intensive markets, the market has turned into a buyers' market in which the real strength is concentrated for customers who have been given opportunities to choose and differentiate between multiple alternatives to satisfy their desires, at the lowest cost and with the easiest terms, then competition becomes the only way to deal in the market by working to acquire and develop competitiveness.

According to (Huang et al, 2015), the competitive advantage of companies stems from two forces, first is an internal force that stems from capabilities and resources of the company, and second is an external force that stems from the market position in the industry. Therefore, the competitive advantages of companies may disappear if the company's surrounding environment factors change.

3.6 Dimensions of competitive advantage:

3.6.1 Cost dimension:

Any company has to focus on cost dimension in order to make the costs of producing and marketing its products lower than its competitors (Dilworth, 2001).

Companies that seek to obtain a larger market share as a basis for their success and superiority are those that offer their products at a lower cost than their competitors.

The lowest cost is the main goal of companies that compete through cost, and even companies that compete through competitive advantages other than

cost, they seek to achieve low costs for products they produce (Slack, et.al, 2004).

(Al-Azzawi, 2005) indicates that operations management seeks to reduce production costs compared to competitors, and to reach competitive prices that enhance competitive advantage of products in the market.

(Krajewsky and Ritzman, 2005) shows that reducing price of products contributes to an increase in demand, as well as that it may reduce the profit margin if the company does not produce its products at low costs. The company reduces costs through optimal use of the production capacity available, in addition to continuous improvement for product quality, creativity and innovation in product design and good running of operations. This is an important basis for reducing costs as well as helping managers in supporting and backing the company's strategy to be a cost leader (Evans and Collier, 2007)

3.6.2 Quality Dimension:

Quality dimension is one of the important competitive advantages, which refers to doing things correctly to provide products that fit the needs of customers. The company must obtain the expected value that is commensurate with its mission and requirements to determine the expectations and desires of customers about quality with working to achieve them (Slack et al., 2004).

(Zolghadar (2007) says that dimension of quality means the ability to provide products that match the needs and desires of customers, as characteristics of the product will meet the customer's satisfaction.

(Evans and Collier, 2007) stress that high-quality products contribute to improving the company's reputation and achieving customer satisfaction, as well as that company can impose higher prices in case of providing high-quality products to meet customers' requirements.

Since the concept of quality means conformity with requirements, and high-quality means that the production system must be developed to reduce faults so that production conforms to pre-established specifications and has high reliability (Al-Lami and Al-Bayati, 2008).

Quality is quality of the institution or company in order to improve and develop operations and performance, reduce costs, control time, achieve customer

desires and market requirements, work in a team spirit, and strengthen belonging. Companies must constantly improve the efficiency of employees to improve productivity and pay more attention to the company's new customers.

3.6.3 Flexibility Dimension:

Flexibility is described as the basis for achieving company's competitive advantage by responding quickly to changes that may occur in product design to suit the needs of customers. Flexibility means the ability to produce a wide range of products, introduce new products, and modify existing products quickly in addition to responding to customer needs.

Flexibility is an important dimension. It means the company's ability to provide a variety of products at the required time, and to develop existing products and improve its operations to introduce new products.

As (for Slack et al., 2004) indicated that flexibility means the company’s ability to change operations to other methods. This may mean changing the performance of operations as well as changing the method and time of performing operations, as the customer needs to change operations.

Flexibility is related the company's operations, which enables it to respond quickly to customer needs efficiently. It has become an effective weapon in competition between companies, as it includes the ability to manufacture a wide variety of products and constantly present new products, as well as speed in developing existing products, in addition to responding in general to customer's needs and desires.

It can also be said that flexibility means the company's ability to respond quickly to changes related to product design characteristics or changes related to the volume of customer orders (William, 2007).

3.6.4 Competition and Delivery Dimension:

Competition takes many forms in market, depending on the institution's ability to compete with other products, through adoption of appropriate marketing strategies, and ability to control price of the commodity and delivery in time. Competition and delivery dimension is the basic basis for company's competitive advantage in the markets. By reducing lead times, speed in designing new products and presenting them to customers in the shortest possible time (Bragmang, 1990).

Delivery takes forms, including speed of delivery. This speed is measured by the time taken between receiving customer's request and meeting the request, which is called the waiting time. It is possible to increase speed of processing by reducing the waiting time and delivery on time.

As for speed of development: it is the speed of introducing a new product. It is measured by the time between idea generation until the final design of product and its presentation to the market (Krajewsky and Ritzman, 2005).

(Al-Lami, 2008) believes that the increasing importance of time for customer has led to an increase in competition between companies on the basis of time, which aims to speed up the introduction of new products and the speed of entry into markets. Time in today's society is one of the main sources to achieve a competitive advantage for the company, as customers want a quick response to their requests and reduce waiting times, many companies use time as a competitive weapon by delivering products to customers faster and better.

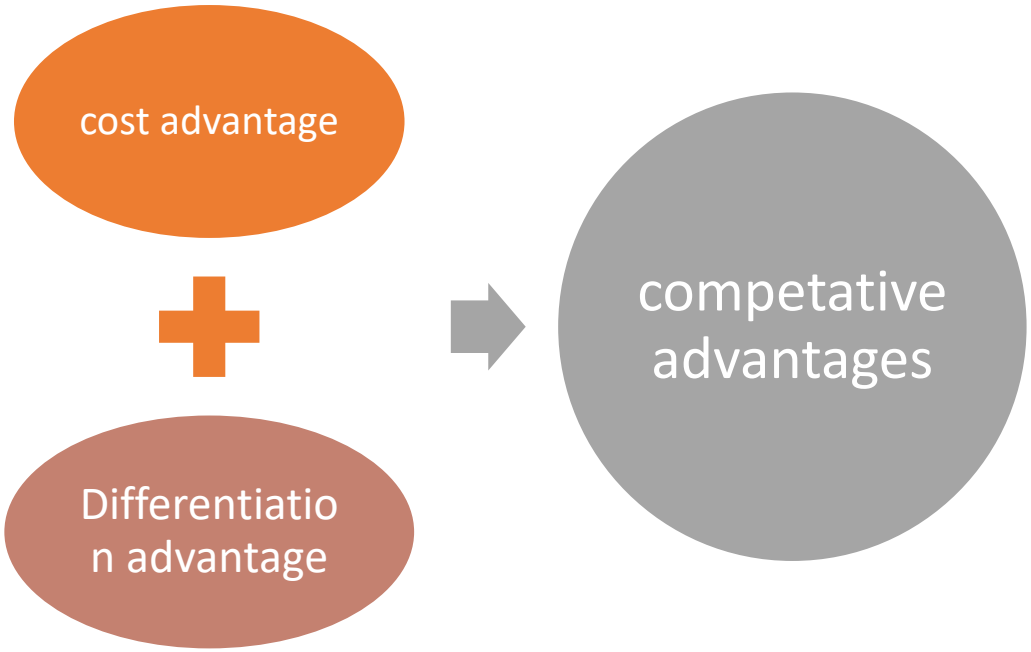
3.7 Types of competitive advantage:

There are differences among researchers in the field of business administration about the types of competitive advantage, which can be referred to as shown in the following table (Hamdan and Idris, 2009):

Researchers	year	Types of competitive advantage
Evans	1993	Cost-quality-flexibility-delivery-creativity
Certo & Peter	1995	Cost - quality - flexibility - reliability
Muntzer & Quinn	1996	Cost-quality-flexibility-time
Bost	1997	Cost-differentiation-growth-alliances-creativity
Siak, et… al	1998	Design - quality - flexibility - ease of use - aesthetic - creativity
Macmillan & Tempo	2000	Cost - differentiation - flexibility - time - technology

According to (Besanko et al, 2010) there is no specific competitive advantage that remains in the long term due to competition in the markets, but most researchers in the field of business administration classify competitive advantage into two main types (the advantage of the lowest cost, and the advantage of product differentiation).

Figure No. (3-1): Types of Competitive Advantages



Source: Prepared by the researcher

3.7.1 Low Cost Advantage:

According to Porter, an organization can gain a lower cost advantage if its accumulated costs from value-producing activities are lower than those of its competitors (Porter, 1990). So that its lower costs enable it to sell its products or services at below market prices. To achieve a cost advantage, the company's total cumulative costs across its value chain must be less in total than the

cumulative costs of its competitors. There are two ways to achieve this (Thompson & Strickland, 2006):

Internal activities performance of the value chain and effectively managing the elements that can reduce the costs of vital activities in the value chain, is better and more efficiently than competitors.

Renewing the company's value chain to bypass some of the activities that cause high costs.

Now let us review each of these two methods to achieve the cost-cutting advantage:

- Cost control engines:

Nine main drivers affect when determining the costs of the company in each sector of the value chain activities:

1. Economies of scale or economic imperfections of scale:

The costs of a given value chain activity are often subject to economies of scale or economic disadvantages of size, where economies of scale increase as activities are performed at a lower cost and in greater volumes, the ability to distribute shares of some costs such as research and development and advertising over a larger sales volume reduces product costs.

2. Effects of the learning and experience curve:

The cost of performing any activity can decrease over time, given the savings in the experience and learning curve, the economy can produce costs more than just teaching employees how to perform the tasks assigned to them, but also through the high efficiency of repairing technical errors, improving plant planning and developing workflow methods.

3. Cost of basic resource inputs:

The cost of performing value chain activities depends in part, on what the company must pay for basic resource inputs. Not all competitors incur the same costs versus items purchased from suppliers, or the resources used to perform value chain activities. Often, the efficiency with which a company

manages its costs is to acquire essential resource inputs as a major driver to reduce overall costs.

4- Linking to other activities in value chain of the company or industry:

When the cost of performing an activity is affected by how the other activities are performed, it can reduce costs by making sure that the activities related to each other are implemented in an integrated, coordinated and interrelated manner. For example, when the costs of quality control in the company or the costs of storing raw materials are linked to supplier activities, it may be possible to achieve economy or cost savings by working cooperatively with key suppliers in designing parts and components and quality assurance procedures.

5. Sharing opportunities open with other institutional units or other business units within the company:

Often, production lines or different business units within a company can participate positively in order processing systems, customer invoicing or use of the same store, and such sharing can lead to significant financial savings in cost.

6. Advantages of the enterprise's vertical integration versus contracting with external suppliers:

Full or partial integration in the supplier’s activities or allies of the company’s main channels can allow avoidance of strong negotiating power of suppliers or buyers facing the company. It also carries basic integration - From the outset or fundamental integration of the final product - has the potential for success, if there is significant cost savings resulting from the performance of one company in close activities in the industry value chain.

But what often happens, is that contracting with external specialists or suppliers to perform certain jobs and activities is less expensive than doing it by the company itself. Where these external specialists, thanks to their experiences and the volume of their business, can perform the job at a cost, less than what the company costs if it did these jobs by herself.

7. Timing considerations associated with the industry's first interior features:

Sometimes the first brand on the market is able to establish and maintain its brand name at a lower cost than the brands that follow.

8. Energy use ratio:

Energy use in production is a big required driver for activity groups in the value chain that have huge fixed costs associated with them. The high-energy usage rates allow the distribution of depreciation items and other fixed costs on a larger size than the units produced, which reduces the fixed costs associated with each unit.

9. Strategic choices and operating decisions:

Company costs can increase or decrease by making a variety of internal management decisions, such as adding or removing services provided to buyers, integrating more or less performance and quality features into the product, and paying higher or less additional wages and incentives to employees.

- **Value chain renewal and reengineering:**

You can track cost advantages tremendously, by finding innovative ways to restructure operations and tasks, cancel low-value activities, get rid of luxuries, and provide the basics economically. The main ways companies can achieve cost advantage by reconfiguring value chains include:

1. Switching to e-commerce technology.

2. Using direct selling and marketing directions for the end user.

3. Simplifying the product design and remove unnecessary additions.

4. Switching to less complex, more structured, and more flexible technological processes.

5. Overlooking the use of raw materials or high-cost components.

6. Spatial redistribution of machines.

7. Stopping using the trend of producing standard or general products for everyone.

8. Re-engineering core business processes, to enhance business steps and get rid of low-value activities.

As for the risks associated with the low-cost strategy, it is the ability of competing companies to reduce their costs, with technological progress, competitors may be able to provide new production capabilities that exceed

the capabilities of the organization and thus eliminate the competitive advantage of the organization.

3.7.2 Product differentiation Advantage:

Differentiation strategy is based on developing and providing a product or service with a high level of quality. The core of the Differentiation Strategy is for the company to be distinctive and unique in ways that are valuable to customers, enabling it to achieve its continuity and maintain that distinction.

The advantage of product differentiation means the organization's ability to provide a product that is different from the product or products offered by competitors from the consumer point of view. This means that the organization is distinguished from its competitors when it can possess unique characteristics; it makes the customer relate to it as after-sales services, to locate areas close to consumers or to be proactive in its field of activity. This distinction is clearly recognized by the customer who is looking for a permanent advantage. Competitive advantage can also be achieved by offering a good or service that competitors cannot easily imitate or produce a copy of differentiation allows the organization to impose a higher price than competitors or a distinct market share as it protects the current competition and places barriers to new competitors.

One of the basic considerations that must be recognized is that distinctiveness does not mean that the organization neglects the cost structure therein, as the cost of adopting the distinction feature should not be so high that it affects the prices of its products, thus weakening its competitiveness.

Conditions that must be met to implement the distinction feature:

• When consumers value the differences in a product (a good or service); in a degree that distinguishes it from other products.

• Versatility of the product and its compatibility with the needs of consumer.

• Lack of a large number of competitors follows the same strategy of excellence.

Companies that succeed in implementing a strategy of excellence often adopt the following internal policies (Coeurderoy and Durand, 2004):

• Carrying out advanced and pioneering scientific research.

• Hiring highly skilled and creative employees within the product development team.

• Building a strong sales team capable of communicating the perceived strengths of product to customers.

As for the risks associated with applying the excellence strategy, they include the possibility of imitation by competitors, and changes in customer tastes, in addition to the fact that some different companies that follow focus strategies may be able to achieve greater excellence in the same market sector in which the organization operates (Amit, 1986).

3.8 General Basis for Building Competitive Advantages:

Michael Porter says that competitive advantage can only be understood if we consider companies as a single unit, as the company arises within it many separate activities, including product design and manufacture, product marketing, delivery of products to buyers. Each of these activities carried out by the organization can create a competitive advantage to it in terms of minimum cost or distinction. Therefore, the activities carried out by the company in a scientific way with looking at how these activities interact with each other is very necessary to analyze the sources of competitive advantage (Porter, 1985).

Firms that adhere to one strategy (cost leadership, excellence, or focus) have a higher level of performance than other organizations that use more than one strategy (Hudson, 2001).

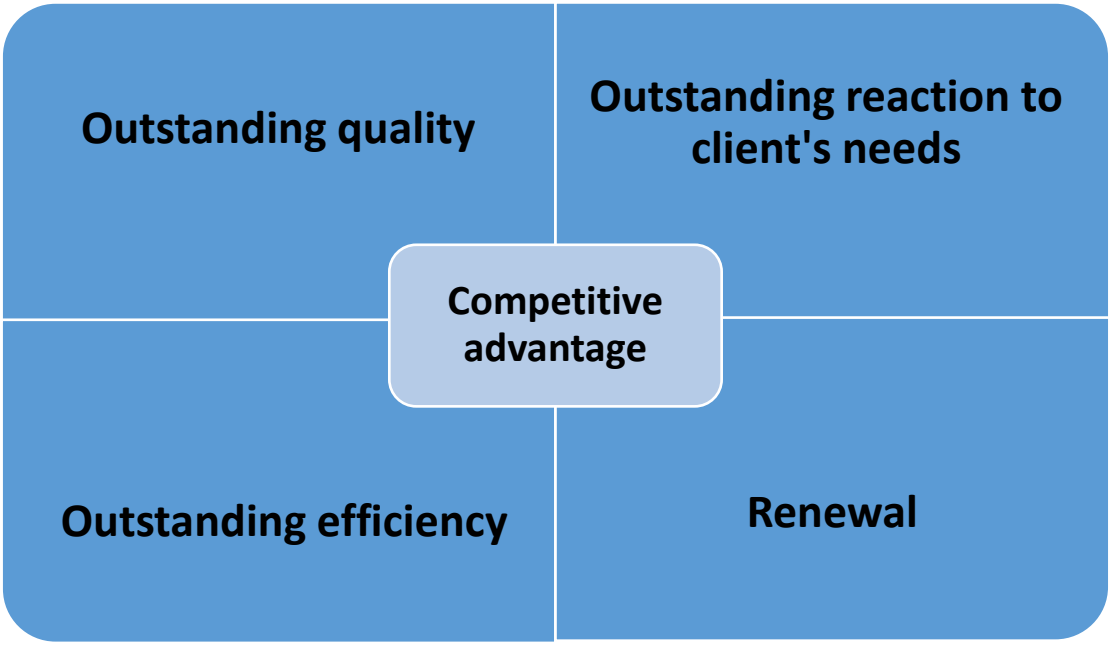
There are four factors involved in building competitive advantages (efficiency, quality, innovation, and customer needs response).

They represent the general building blocks of competitive advantages that a company can embrace, regardless of its industry, the products it produces, or the services that provides (Jones & Hill 1998).

Although we will discuss each factor separately, there is an interrelated relationship includes them, as superior quality can lead to superior efficiency,

while innovation supports (efficiency, quality, and responsiveness to customer needs).

Figure No. (3-2): General Basis for Building Competitive Advantages



Source: Prepared by the researcher

3.8.1 Efficiency:

Companies are tools for converting inputs into outputs; inputs are basic factors of production such as employment, land, capital, management, and technological skill. The outputs are the goods and services the company produces. The simplest measure of efficiency is the amount of inputs required to produce certain outputs. This means that (efficiency = outputs / inputs).

The more efficient a company is the less input would be required to produce certain outputs.

3.8.2 Quality:

Quality products are goods and services that you can rely on and trust to perform the functions designed to perform them. The high quality of the product has a multiplier effect on competitive advantages.

A direct trend indicates that a high level of quality leads to improved organizational performance for companies such as improving financial and marketing performance, on the other hand, the indirect trend indicates that quality gives the organization a competitive advantage, and a competitive advantage improves organizational performance (Alghamdi & Bach, 2013).

3.8.3 Innovation:

Renewal is defined as anything new or recent related to the way the company is managed or the products it produces. Renewal includes every progress that occurs in the types of products, production processes, management systems, organizational structures and strategies adopted by the company.

3.8.4 Responding to customer needs:

To achieve this factor superiorly, the company must be able to perform tasks better than competitors in identifying and satisfying the needs of its customers. Then consumers will place more value on their products, creating excellence based on competitive advantages.

The process of improving product quality must be in line with achieving the customer's needs, as in the case of developing new products that have features that old products on the market lack.

Criteria for Judging the Quality of Competitive Advantage:

To judge the quality of competitive advantage, there are several criteria (Khalil, 1996):

A. **Source of the advantage:** Competitive advantage can be arranged according to two levels:

Low-level competitive advantages such as the lowest cost for both the workforce and raw materials, as it is relatively easy to imitate and simulate by competitors.

High-level competitive advantages such as: high technology, product excellence (excellence by providing a high-quality product or service), good reputation on the brand based on accumulated marketing efforts, or strong customer relationships governed by high conversion or exchange costs, these advantages are characterized with a number of characteristics, the most important of which are:

They require availability of skills and abilities from a high level, such as specially trained individuals, internal technical capabilities and close relationships with large clients.

It relies on a long history of continuous and cumulative investment in physical facilities, specialized learning, research, development and marketing.

The performance of these activities entails the creation of a group of tangible and intangible assets, in the form of a good reputation, close relationships with clients, or a pool of specialized knowledge. It can be said that the benefits of lower cost are less sustainable and communicative than the benefits of distinguishing products or services.

B. Number of feature sources owned by the organization:

If the organization relies on only one feature, such as: designing the product at the lowest cost or being able to purchase cheap raw materials, it is possible for competitors to identify or overcome the effects of that advantage, but in the case of multiple sources of the advantage, it is difficult for competitors to imitate them all.

(Pitts and Lei, 1996) identifies several sources of competitive advantage:

• Internal sources associated with the company's tangible and intangible resources, such as the basic factors of production, energy and primary resources, distribution channels, assets and others. The competitive advantage may come from used administrative systems, methods of administrative organization, methods of motivation, and used research and development mechanisms.

• External sources, which are many and varied. They are formed through variables of the external environment and its change, which leads to creation of opportunities and advantages that company can exploit and benefit from, such

as the conditions of supply and demand for raw materials, financial, qualified human resources and others.

• Company can build a competitive advantage through use of strategies of horizontal integration, vertical integration, diversification and strategic alliances.

Degree of improvement, development, and continuous renewal of the advantage:

Institutions must move towards seeking new benefits faster, before competitors mimic the existing advantage, so it is necessary for institutions to change old benefits and create new or higher-level competitive advantages.

3.9 Competitive Advantage Determinants:

Two important dimensions define competitive advantage: size of the competitive advantage and scope of competition:

3.9.1 Size of the competitive advantage:

A competitive advantage has the feature of continuity and size if the organization can maintain the advantage of lower cost or product differentiation in light of the competition it faces.

The competitive advantage passes through the same product life cycle.

We mean to continue through time is that the competitive advantage has a life cycle similar to the product. These stages are represented in: (Poshnaf, 2003)

Application stage: It is the longest stage in relation to the establishment of the competitive advantage, because it needs a lot of human and material thinking and preparation. It gets over time with more and more prevalence.

Adoption stage: The advantage here is relatively stable in terms of prevalence, as competitors are beginning to focus on it.

Imitation stage: the size of the advantage is declining and is slowly turning towards stagnation, because competitors have imitated the advantage of the institution, consequently its primacy over it is diminished.

Stage of necessity: here comes the need to improve the current feature and develop it quickly, or to create a new feature on completely different principles than the foundations of the current feature. If the organization is not able to improve or obtain a new feature, it will lose its primacy completely then it will be difficult to return to competition.

3.9.2 Scope of Competition or Target Market:

The scope of competition includes four dimensions (Khalil, 1996).

1- Market segment: Reflects the diversity of the organization's outputs, as well as the diversity of customers who are served, there is a choice between focusing on a specific sector of the market or serving the entire market.

2- Degree of forward integration: The forward vertical integration is for the organization to bear the responsibility of distribution during the various episodes up to the consumer. It indicates degree of the institution's performance of its various activities, whether internal or external, as high front integration compared to the competitor may achieve the lowest cost.

3- Geographical dimension: represents the number of geographical regions or countries in which the institution competes. This dimension allows achieving competitive advantages by providing one type of activities and jobs across different geographical regions and highlights the importance of this feature for global institutions as it provides its products or services in all parts the world.

4- Activity Sector: It expresses the extent of correlation between the industries in which the establishment operates, as there are links between different activities across several industries that create opportunities to achieve many competitive advantages. It may be possible to use the same facilities or technology and expertise across different industries to which the institution belongs.

2.10 Indicators of Competitive Advantage:

There are many indicators that are used to indicate the company's competitive advantage, such as profitability, market share, sales volume, consumer satisfaction, share value, product diversity, and ability to export (Silva & Tadahsi, 2005).

However, the most widely used and common indicators are the indicators of profitability, market share and sales volume (Day & Wensley, 1989) because of their advantages such as the availability of data necessary for their calculation and ease of obtaining them. All of these indicators are quantitative, that is, they can be calculated accurately and easily, unlike Customer Satisfaction Indicators.

The following is an explanation of these indicators:

First: Profitability:

Profitability is defined as a measure used to evaluate performance of projects by calculating the ratio of net income to assets or investments. Profitability can be maximized by improving the company's investments, using modern technologies and making better use of resources.

Second: Market Share:

Market share measure is used to distinguish between winners and losers in the market. This measure is used to calculate the company's share of sales in the market and compare it with its main competitors.

The market share measure gives an indication of the company's position in the market. The decrease in this indicator indicates an existence of a problem that management must solve. Market share can be measured using three methods (Kotler, 2000):

1 .Total market share: It is calculated by dividing company's sales by total sales in the market.

2. Relative market share: It is calculated by dividing company's total sales by sales of the company's largest competitor in the market.

3. Served market share: It is calculated by dividing company's sales by total sales of the served market.

Third: Sales volume:

Sales volume is an indicator of success of the company's business and its market share. Most companies seek to set a specific target for the amount of sales volume to be achieved in order to follow up organization's performance and degree of success in achieving its goals.

Forth chapter

4.1 The relationship between green supply chain management and competitive advantage:

(Marhamati & Aziz, 2011) study has researched the impact of green supply chain management on green performance and competitiveness. It found a positive impact of green internal activities on green external cooperation.

Also, green internal activities and green external cooperation have a positive impact on the competitiveness of the studied companies. In general, the results indicated that strengthening green supply chain management improves green performance, which in turn increases the competitiveness of the company.

(Baah & Jin, 2019) study also studied the impact of sustainable supply chain management on organizational performance, with a mediating role for competitive advantage. The study concluded that there is an impact and a positive relationship between sustainable supply chain management and between competitive advantage and organizational performance.

The study also found an indirect effect of competitive advantage on the relationship between sustainable supply chain management and organizational performance.

(Khaksar et al, 2016) study also studied the impact of green supply chain management activities on environmental performance and competitive advantage. The study aimed to assess the relationship between green supply, green creativity, environmental performance and competitive advantage. The results of study showed that there is a relationship and a positive effect between green supply, green creativity and the organization's environmental performance.

There is also a positive relationship between green innovation and environmental performance on the one hand, and environmental performance and competitive advantage on the other hand.

(Sharabati, 2021) study also studied the impact of green supply chain management (green purchasing, green operations, green selling) on competitive advantage.

The results of study showed that the elements of green supply chain have an impact on the competitive advantage of the studied companies, as green operations have the greatest impact on the competitive advantage, then green purchasing and finally green selling.

As for (Ton & Zailani, 2016) study, it examined the impact of green supply chain management activities on the competitiveness of companies, and it found a direct impact of green purchasing and green production on the competitiveness of company, while investment recovery has no relationship with the competitiveness of the company.

(Abdul Qadir and Muhammad, 2020) study examined the relationship between green supply chain management and performance and competitive advantage, as it found a strong positive relationship between green supply chain practices (green purchasing, green manufacturing, reverse supply) and financial and environmental performance.

The study also found a strong positive relationship between green supply chain practices and competitive advantage (economic and environmental), and it also found a relationship between performance and competitive advantage in the institution.

(Markley & Davis, 2007) study also aimed to identify the potential competitive advantages that organizations can create through green supply chain management practices. It concluded that sources of competitive advantage for the organization have become scarce and other potential areas of competitive advantage must be explored.

4.2 Comparison between results of the current study and results of the previous studies:

When comparing results of the current study with previous studies, we see that results of the current study are consistent with the results of previous studies (Khaksar et al, 2016) (Sharabati, 2021) (Abdul Qadir and Muhammad, 2020) on

the existence of a positive relationship between green supply chain management activities and competitive advantage.

While the results of the current study differed with the study (Sharabati, 2021) in the strength order of the influence of the elements of green supply chain management on the competitive advantage, where the order in our current study was (green purchasing, green operations, then green selling), while the order was in the study (Sharabati, 2021) for green operations, green purchasing, and then green selling.

Fifth chapter:

5.1 Community and Sample Research

- **Research community:**

The study population is represented by the employees of food products companies in the city of Damascus and its countryside.

As for the research sample, it consists of 139 questionnaires, where 173 questionnaires were distributed, but only 152 questionnaires were returned. Questionnaires valid for analysis are only 139 questionnaires.

- **Research assumes:**

H0: There is no statistically significant effect of green supply chain management practices on competitive advantage of the studied companies. The following sub-hypotheses are derived from it:

1) There is no statistically significant effect of green purchasing on competitive advantage of the studied companies.

2) There is no statistically significant effect of green operations on competitive advantage of the studied companies.

3) There is no statistically significant effect of green selling on competitive advantage of the studied companies.

- **Description of the questionnaire and its reliability and validity test:**

Questionnaire Description:

The researcher used the paper questionnaire as a tool for data collection. It consists of two parts:

The first section deals with the definitional and demographic variables of the research sample, to identify the characteristics of the clients under study. It includes both genders (male, female)

Age (under 20 years old, 21-40 years old, 41-59 years old, 60 years old and over)

Education level (below high school, high school, institute, university and above).

Number of years of work for the studied companies (less than one year, one year to less than four years, four years to less than seven years, seven years and more).

The second section focuses on research variables and addresses four main axes:

A - First axis: deals with the green purchase scale and consists of five statements.

B - Second axis: deals with the scale of green operations and consists of five statements.

C - Third axis: deals with the green sales scale and consists of five statements.

D - Fourth axis: deals with the measure of competitive advantage and consists of nine statements.

The researcher followed Likert's five-factor method in designing the questionnaire, by assigning five marks for each phrase from 1 to 5, where each degree indicates a specific answer as in the following figure:

Table No. (5-1) Values of Likert Five-Way Scale

Option	Corresponding value	Weighted average field
Strongly Disagree	1	1.80 – 1
not agree	2	2.60 – 1.81
neutral	3	3.40 – 2.61
Agree	4	4.20 – 3.41
Strongly Agree	5	5 – 4.21

Source: prepared by the researcher.

Questionnaire stability and validity test:

The questionnaire's reliability and validity will be tested through Cronbach's alpha coefficient and the validity coefficient for each of the questionnaire's axes. As the value of Cronbach's alpha coefficient and honesty coefficient is large and exceeds 60%, which is the accepted value in social and economic sciences, the greater the stability in the questionnaire questions. Therefore, the credibility in the data increases and it is amenable to analysis reflecting the results of the sample analysis on the studied community. The following table shows results of testing the reliability and validity of each of the questionnaire's axes:

Table No. (5-2) Testing stability and validity of each axis separately.

Kornbach's alpha test		
Studied variable	**Number of phrases**	**Stability Coefficient**
Green Purchase	5	0.680
Green Operations	5	0.716
Green Sale	5	0.819
Competitive Advantage	9	0.811

Source: Prepared by the researcher based on SPSS program outputs.

It is noted from the previous table:

1. The value of stability coefficient for the statements of the green purchase axis was 0.680. It confirms integrity and accuracy of questions within the distributed questionnaire and their correct expression of the variable.

2. The value of stability coefficient for the statements of the green operations axis was 0.716, which confirms integrity and accuracy of questions within the distributed questionnaire and their correct expression of the variable.

3. The value of stability coefficient for the statements of the green sales axis is 0.819, which confirms integrity and accuracy of questions within the distributed questionnaire and their correct expression of the variable.

4. The value of stability coefficient for the statements of the competitive advantage axis was 0.811, which confirms integrity and accuracy of questions within the distributed questionnaire and their correct expression of the variable.

Analysis of Demographic and Defining Factors:

Below we present the frequencies and percentages of the sample members according to their demographic and identification characteristics:

a- gender

The following table represents frequency distribution of the studied sample members by gender:

Table No. (5-3) Distribution of the sample by gender

Gender	repetitions	Ratio	Combined ratio
Male	59	%43	57%
Female	80	57%	100%
Total	**139**	**100%**	

Source: Prepared by the researcher based on SPSS program outputs.

We note from the previous table:

1. Number of male respondents who answered the questionnaire was 59, which constitutes 43% of the studied sample.

2. Number of female respondents who answered the questionnaire reached 80, which constitutes 57% of the studied sample.

b- Age group:

The following table represents frequency distribution of the studied sample by age group:

Table No. (5-4) Distribution of the sample by age group

Age	Repetitions	Ratio	Combined ratio
20 years and under	15	11%	11%
21 to 40 years old	70	50%	61%
41 to 59 years old	38	27%	88%
60 years and over	16	12%	100%
The total	**139**	**100%**	

Source: Prepared by the researcher based on SPSS program outputs.

We note from the previous table that vast majority of those who answered the questionnaire are in age group between 21 and 40 years:

1. Number of respondents aged 20 years and under were 15 employees, which constitutes 11% of the studied sample.

2. Number of respondents aged 21 to 40 years were 70 employees, which constitutes 50% of the studied sample.

3. Number of respondents aged 41 to 59 years were 38 employees, which constitutes 27% of the studied sample.

4. Number of respondents aged more than 60 years, were 16 employees, which constitutes 12% of the studied sample.

c- Educational level:

The distribution of educational level of the studied sample can be summarized in the following table:

Table No. (5-5) Distribution of the studied educational level categories

Qualification	Repetitions	Percentage	Combined ratio
Less than a high school diploma	6	4%	4%
high school certificate	20	14%	18%
Average Institute	51	37%	55%
University and above	62	45%	100%
Total	**139**	**100%**	

Source: Prepared by the researcher based on SPSS program outputs.

It is noted from the table that most respondents to the questionnaire are holders of a university degree and above. In more detail, we find:

1. Number of respondents with less than a high school certificate reached 6 employees, which constitutes 4% of the studied sample.

2. Number of respondents with high school certificates reached 20, which constitutes 14% of the studied sample.

3. Number of respondents with intermediate institute reached 51, which constitutes 37% of the studied sample.

4. Number of respondents with a university degree and above reached 62, which constitutes 45% of the studied sample.

D- Number of years working in the company:

The following table represents distribution of the number of years of work in the company for the studied sample:

Table No. (5-6) Distribution of number of years of work in the company for the studied sample

Number of years working in the company	Repetitions	Ratio	Combined Ratio
less than one year	19	14%	14%
1 year to less than 4 years	47	34%	48%
4 years to less than 7 years	50	36%	84%
7 years and more	23	16%	100%
Total	**139**	**100%**	

Source: Prepared by the researcher based on SPSS program outputs.

It is noted from the table that most respondents to the questionnaire are employees within the company for a period between four years to less than seven years. In more detail, we find:

Number of respondents who have worked in the company for less than a year is 19, which constitutes 14% of the studied sample.

Number of respondents who worked in the company from 1 year to less than 4 years is 47, which constitutes 34% of the studied sample.

Number of respondents who worked in the company from 4 years to less than 7 years is 50, which constitutes 36% of the studied sample.

Number of respondents who worked in the company for 7 years or more are 23, which constitutes 16% of the studied sample.

Descriptive statistics and general trend analysis of answers:

Below we show frequency of the answers according to options of the five-point Likert scale and descriptive statistics (arithmetic mean, standard deviation) in addition to calculated t values, level of significance and general trend for each of the statements of each axis, then the axis as a whole.

Table No. (5-7) Descriptive statistics and general trend of answers to the questionnaire questions

Green Purchasing axis	Arithmetic Mean	Standard Deviation	Green Selling axis	Arithmetic Mean	Standard Deviation
Company provides specifications to suppliers that include environmental requirements	4.04	0.962	Company places environmental labels on products	3.85	1.021
Company performs environmental audits of supply operations	4.14	0.795	Company uses environmentally friendly packaging and transportation processes	3.83	0.975
Company uses ISO 14001 as a standard for selecting suppliers.	3.92	0.893	Company provides customers with information about environmentally friendly products	3.85	1.069
Company prefers products that consume fewer natural resources	4.09	0.812	Company reuses and recycles packaging	3.86	1.126
Company works with suppliers to address environmental problems	4.11	0.857	Company collects parcels for proper disposal	4.07	0.990
Whole green purchasing axis	4.06	0.661	**Whole green selling axis**	3.89	0.710
Green Operations axis	arithmetic mean	standard deviation	Competitive advantage axis	arithmetic mean	standard deviation
Company uses machines or tools that consume less energy, water and fuel	4.27	0.824	Company uses the available resources economically	4.22	0.771
Company evaluates the impact and life cycle of manufacturing tools	4.22	0.781	Company uses research and development to modernize its	4.27	0.824

			production processes to reach goals at the lowest cost		
Company assesses the risks of using energy and resources	4.14	0.795	Company is constantly working to reduce the direct costs of production	4.22	0.781
Company uses environmentally friendly raw materials	4.12	0.781	Company uses multiple methods to improve product quality	4.14	0.795
Company uses efficient processes to reduce solid waste, air emissions and conserve energy and water	4.18	0.783	Company uses multiple methods to control the quality of products	3.92	0.893
Whole Green Operations axis	4.19	0.525	Company uses ISO standards to ensure the quality of products	3.98	0.864
			Company adheres to the deadlines for delivering products to customers	4.12	0.781
			Our company has the ability to deliver customer orders faster than competitors	4.16	0.935
			Commitment to delivery on time is one of the main goals of the company	4.11	0.831
			Whole competitive advantage axis	4.13	0.525

Source: Prepared by the researcher based on SPSS program outputs.

It can be noted in the above table that arithmetic mean values are between the range 3.83 and 4.27, which indicate strong agreement and agreement based on the five-point Likert scale.

We also note in the standard deviation that numbers are not large, which indicates that dispersion around the answers is not large, and the largest percentage of dispersion is located at the green selling axis.

Hypothesis testing:

Pearson Correlation Test:

Pearson's linear correlation coefficient is one of the most widely used correlation coefficients, especially in the humanities and social sciences. It is used in particular when the data of both variables to be measured are quantitative data, as it is in the five-year Likert scale.

This test is used to measure change in the dependent variable when values of the independent variable change. It has the following characteristics:

1. It is denoted by the symbol (r), its value is zero when the two variables are completely independent.

2. Its positive value means that there is a direct correlation, and it is a perfect direct correlation when the correlation coefficient is equal to one (+1).

3. Its negative value means that there is an inverse correlation, and the correlation is completely inverse when the correlation coefficient is (-1)

4. It has a weak direct correlation when 0.4 > r >0, and a weak inverse correlation when 0.4-<r<0.

5. It has a medium direct correlation when 0.4 < r< 0.6, and a medium inverse correlation when -0.6 < r < 0.4 -.

6. There is a strong direct correlation when 1 > r > 0.6 and a strong inverse correlation when 1-<r<0.6-.

The null hypothesis of linear correlation H_0 states:

- There is no statistically significant association of green supply chain management practices on competitive advantage including the following sub-hypotheses:
- There is no statistically significant association with green purchasing on competitive advantage.
- There is no statistically significant correlation between green operations and competitive advantage.
- There is no statistically significant association of green selling on competitive advantage.
- While the alternative hypothesis H_1 states the opposite and proves the existence of this link.

Table No. (5-8) Correlation coefficients for the study variables

Correlation Coefficients					
		Green buy	Green operations	Green sale	**Competitive advantage**
Competitive advantage	Pearson Correlation Test	0.814	0.902	0.567	**1**
	Significance degree	0.00	0.00	0.000	
	Vocabulary number	139	139	139	**139**

Source: Student preparation based on SPSS program outputs.

It is noted from the previous table:

There is a correlation between green buy variable and competitive advantage, where the significance level is 0.05 > 0.00 and the test value is 0.814 Accordingly, the alternative hypothesis is accepted and the correlation is

positive. It expresses a strong direct correlation between green buying and competitive advantage.

There is a correlation between green operations variable and competitive advantage, where the significance level is 0.05>0.00 and the test value is 0.902. Accordingly, the alternative hypothesis is accepted and the correlation is positive. It expresses a strong direct correlation between green processes and competitive advantage.

There is no correlation between green sell variable and competitive advantage, where the significance level value is 0.05>0.00 and the test value is 0.567. Accordingly, the alternative hypothesis is accepted and the correlation is positive, and expresses an average direct correlation between green selling and competitive advantage.

Linear regression analysis:

To study the relationship between the independent variables and the dependent variable, we will follow the linear regression method with entering the independent variable and measuring its effect on the dependent variable by Enter method then the resulting model will be analyzed.

First: the relationship between green purchasing and competitive advantage.

Linear Correlation:

Through this test, the coefficient of determination and the correlation coefficient between the dependent variable and the independent variable will be studied.

Table No. (5-9) Linear correlation model of the relationship between the two variables

Model Summary				
Sample	correlation coefficient R	coefficient of determination R^2	Modified determination factor Adjusted R^2	Standard Error of Estimation
linear link	0.814	0.663	0.660	0.306

Source: Student preparation based on SPSS program outputs.

The value of the correlation coefficient R = 0.814, which is a good value and is higher than 60%, which indicates a strong correlation within the studied model.

As for value of the coefficient of determination R^2 = 0.663, which expresses size of the effect in sense of the extent of influence of the independent variable on the dependent variable, which means that the independent variable entered in the model (green purchase) It affects by 0.663 on the dependent variable of competitive advantage, which is a good percentage. It also indicates the presence of other variables that were not included in the model that affect competitive advantage. It could be exposed in future studies. We find that the adjusted R^2 (after taking into account the error) is 0.660.

ANOVA Regression line variance analysis:

This analysis examines accuracy and appropriateness of the regression line model for the data as:

Null hypothesis H_0 in this test is: The regression line does not fit the given data.

Alternative Hypothesis H_1: The regression line fits the given data.

Table No. (5-10) ANOVA Analysis of Variance

ANOVA Regression line variance analysis						
Sample		Sum of squares	Degrees of freedom	Squares Ratio	Analysis of variance test	**Significance level**
Linear Correlation	Regression	25.226	1	25.226	269.208	**0.000**
	The rest	12.837	137	0.094		
	Total	38.063	138			

Source: Student preparation based on SPSS program outputs.

From the previous table, we are interested in looking at the significance level of the test, here it is equal to 0.000, which is less than 0.05, this indicates that the model is accurate, reliable and trusted, therefore the null hypothesis is rejected and the alternative hypothesis is accepted. Which confirms the effectiveness and accuracy of the model in embodying the statistical relationship within the studied variables.

Parameters of the form:

Through this test, we will study the existence of a statistically significant relationship between the variables.

The null hypothesis H_0 states:

There is no statistically significant relationship between green purchasing and competitive advantage.

While the alternative hypothesis H_1 states opposite of the above and proves the existence of this relationship.

Table No. (5-11) Coefficients of the Linear Correlation Model

Linear Correlation Model Coefficients						
Sample		Unstandardized Coefficients		Standardized Coefficients	T	Significance level
		B	Std. Error	Beta		
Linear Correlation	Constant	1.501	0.162		9.254	0.000
	green buy	0.647	0.039	0.814	16.408	0.000

Source: Student preparation based on SPSS program outputs.

It is noted from the previous table:

There is a statistically significant relationship between green purchasing and competitive advantage, where value of the significance level is 0.05 > 0.00 , and value of the model coefficient is 0.647. Therefore, null hypothesis is rejected and the alternative hypothesis is accepted, which states that there is a relationship between the two variables.

Second: Relationship between green operations and competitive advantage.

Linear Correlation:

Through this test, the coefficient of determination and the correlation coefficient between the dependent variable and the independent variable will be studied.

Table No. (5-12) Linear correlation model of relationship between the two variables

Model Summary				
Sample	correlation coefficient R	The coefficient of determination R2	The coefficient of Modified determination Adjusted R2	Standard Error of Estimation
linear link	0.902	0.813	0.811	0.228

Source: Student preparation based on SPSS program outputs.

The value of the correlation coefficient R = 0.902, which is a high value and higher than 60%, which indicates a strong correlation within the studied model.

As for value of the coefficient of determination R^2 = 0.813, it expresses size of the effect in sense of the extent of the influence of the independent variable on the dependent variable, which means that the independent variable included in the model (green processes) It affects 0.813 on the dependent variable of competitive advantage, which is a good percentage. It also indicates the presence of other variables that were not included in the model that affect competitive advantage. It could be exposed in future studies. We find that the adjusted R^2 (after taking the error into account) is 0.811.

ANOVA Regression line analysis of variance:

This analysis examines accuracy and appropriateness of the regression line model for the data as:

The null hypothesis H_0: the regression line does not fit the given data.

Alternative Hypothesis H_1: The regression line fits the given data.

Table No. (5-13) Analysis of Variance ANOVA

ANOVA Regression line variance analysis						
Sample		Sum of squares	Degrees of freedom	Squares Ratio	Analysis of variance test	Significance level
Linear Correlation	Regression	30.938	1	30.938	594.904	0.000
	The rest	7.125	137	0.052		
	Total	38.063	138			

Source: Student preparation based on SPSS program outputs.

It is important for us from the above table to look at the significance level of the test, here it is equal to 0.000, which is less than 0.05, this indicates that the model is accurate, reliable and trusted, therefore the null hypothesis is rejected and the alternative hypothesis is accepted. Which confirms the effectiveness and accuracy of the model in embodying the statistical relationship within the studied variables.

Parameters of the form:

Through this test, the existence of a statistically significant relationship between the variables will be studied.

The null hypothesis H_0 states:

There is no statistically significant relationship between green operations and competitive advantage.

While the alternative hypothesis H_1 states the opposite of the above and proves the existence of this relationship.

Table No. (5-14) Coefficients of the Linear Correlation Model

Model Summary				
Sample	correlation coefficient R	The coefficient of determination R2	Modified determination factor Adjusted R2	Standard Error of Estimation
linear link	0.567	0.322	0.317	0.497

Source: Student preparation based on SPSS program outputs.

It is noted from the previous table:

There is a statistically significant relationship between green operations and competitive advantage, where value of the significance level is0.05 > 0.00 and the value of the model coefficient is 0.902. Therefore, the null hypothesis is rejected, and the alternative hypothesis is accepted, which states that there is a relationship between the two variables.

Third: The relationship between green selling and competitive advantage.

Linear Correlation:

Through this test, the coefficient of determination and the correlation coefficient between the dependent variable and the independent variable will be studied.

Table No. (5-15) is a linear correlation model for the relationship between the two variables

Linear Correlation Model Coefficients						
Sample		Unstandardized Coefficients		Standardized Coefficients	T	Significance level
		B	Std. Error	Beta		
Linear Correlation	Constant	0.350	0.156		2.242	0.000
	green buy	0.902	0.037	0.902	24.391	0.000

Source: Student preparation based on SPSS program outputs.

The value of the correlation coefficient R = 0.567, which is an acceptable value and is higher than 40%, which indicates the presence of a medium correlation within the studied model.

As for value of the coefficient of determination R^2 = 0.322, it expresses size of the effect in sense of the extent of the influence of the independent variable on the dependent variable, which means that the independent variable entered in the model (green sale) It affects by 0.322 on the dependent variable of competitive advantage, which is a good percentage. It also indicates the presence of other variables that were not included in the model that affect competitive advantage. It could be exposed in future studies. We find that the adjusted R^2 (after taking into account the error) is 0.317.

ANOVA regression line analysis of variance:

This analysis examines the accuracy and appropriateness of the regression line model for the data as:

The null hypothesis H_0 in this test is that the regression line does not fit the given data.

Alternative Hypothesis H_1: The regression line fits the given data.

Table No. (5-16) ANOVA Analysis of Variance

ANOVA Regression line variance analysis						
Sample		Sum of squares	Degrees of freedom	Squares Ratio	Analysis of variance test	Significance level
Linear Correlation	Regression	12.257	1	12.257	65.070	0.000
	The rest	25.806	137	0.188		
	Total	38.063	138			

Source: Student preparation based on SPSS program outputs.

It is important for us from the above table to look at the significance level of the test, here it is equal to 0.000, which is less than 0.05, this indicates that the model is accurate, reliable and trusted, therefore the null hypothesis is rejected, and the alternative hypothesis is accepted. Which confirms the effectiveness and accuracy of the model in embodying the statistical relationship within the studied variables.

3-2-7-2-3. Parameters of the form:

Through this test, the existence of a statistically significant relationship between the variables will be studied.

The null hypothesis H_0 states:

There is no statistically significant relationship between green selling and competitive advantage.

While the alternative hypothesis H_1 states the opposite of the above and proves the existence of this relationship.

Table No. (5-17) Coefficients of the Linear Correlation Model

Linear Correlation Model Coefficients						
Sample		Unstandardized Coefficients		Standardized Coefficients	T	Significance level
		B	Std. Error	Beta		
Linear Correlation	Constant	2.493	0.206		12.109	0.000
	green buy	0.420	0.052	0.567	8.067	0.000

Source: Student preparation based on SPSS program outputs.

It is noted from the previous table:

There is a statistically significant relationship between green selling and competitive advantage, where value of the significance level is0.05 > 0.00 and the value of the model coefficient is 0.420. Therefore, the null hypothesis is rejected and the alternative hypothesis is accepted, which states that there is a relationship between the two variables.

3-3-1: Results:

The study reached the following results:

- Most of those who answered the questionnaire were females, due to the low percentage of male workers in the Syrian society due to the high rate of migration abroad. The majority of those who answered the questionnaire are from the age group between 21 to 40. It may be because this segment is the most able to work and production.

- The majority of respondents to the questionnaire are workers with a university degree or above. Most of those who answered the questionnaire continued to work for the studied companies from 4 years to less than 7 years.

- There is a statistically significant and positive correlation between green purchasing and competitive advantage.

- There is a statistically significant and positive correlation between green operations and competitive advantage.

- There is a statistically significant and positive correlation between green selling and competitive advantage.

- The biggest impact on competitive advantage is green buying, green operations, and green selling.

Recommendations:

1. I recommend the studied companies to pay attention to protection and preservation of the environment through the implementation of green supply chain activities, as this implementation will contribute to reducing the percentage of carbon and chemical waste that companies emit to nature and thus improving the quality of life for consumers.

2. I recommend the studied companies to pay more attention to green selling activities in order to achieve a better competitive advantage for their products in foreign markets that import Syrian food products.

3. I recommend the studied companies to invest more and allocate budgets in order to establish factories to recycle waste resulting from production processes and not throw them in landfills. This will lead in the long run to increasing the profitability of companies and reducing the percentage of waste.

4. I recommend the studied companies that do not attach too much importance to the green supply chain to give it more importance and use green activities, as these days the percentage of consumers who believe in the importance of using green products is increasing, and governments in most countries are also tending to encourage green supply chains, especially within the environmental and health problems that the world is currently suffering from.

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Appendix 1: Questionnaire

Ladies and Gentlemen.

After Greetings.

The researcher is conducting a scientific study on **"effect of green supply chain management practices on the competitive advantage - Food companies in Damascus and its countryside case study "**. We kindly request that you answer the questions of this questionnaire accurately and objectively, as they will be of great importance in the process of studying ways of developing green supply chain management practices. Note that the data presented here will be used for scientific research purposes only.

Your cooperation is essential to the success of this study, and we appreciate it highly.

Yours sincerely

The researcher

Dania Almufti

First: Green supply chain management Scale:

The following are a number of statements that measure green supply chain management in ……. Please read each statement carefully and then tick (x) at the option that expresses your answer.

No.	Phrase	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
Green purchasing Scale						
1	Providing specification to suppliers that includes environmental requirements					

2	Environmental audits of supply base					
3	ISO14001 certification of supply base as a criterion for selecting vendor					
4	Prefer products that consumed fewer natural resources					
5	Working with suppliers to address environmental problems					
Green operations Scale						
6	Using machines or tools which consume less energy, water and fuel					
7	Impact and life cycle assessment tools for manufacturing					

8	Risk assessment for energy and resource use					
9	Environmentally friendly raw material					
10	Efficient processes to reduce solid waste, air emissions and conserve energy and water					
Green sell Scale						
11	Eco labeling of products					
12	Environment-friendly packaging and transportation					
13	Providing information to customers on environment friendly products					
14	Re-using and					

	recycling of packages					
15	Collection of packages for proper disposal					

Second: The measure of competitive advantage:

Below are a number of phrases that measure the competitive advantage of Food companies in Damascus and its countryside. Please read each phrase carefully, then put a cross (x) on the option that expresses your answer.

	Competitive advantage Scale					
16	The company uses the available resources economically					
17	The company uses research and development to modernize its production processes to reach the goals at the lowest cost					
18	Our company seeks to reduce direct production costs continuously					
19	The company uses various methods to improve the quality of products					
20	The company uses multiple methods to control quality					
21	The company uses ISO standards to ensure quality					
22	Our company adheres to the					

	deadlines when delivering products to customers					
23	Our company has the ability to deliver customer orders faster than competitors					
24	Commitment to on-time delivery is one of the company's primary goals					

Third: Demographic variables

Please read each phrase carefully and put a cross (x) on the category that expresses you:

Sex:

Male	Female

Age:

Under 20 years old	From 21 - 40 years old	From 41 to 59 years old	60 years and over

Qualification:

Less than secondary school	Secondary school	intermediate Institute	University and above

Number of years of work at the company:

Less than 1 year	From 1 year - less than 4 years	From 4 - less than 7 years	7 years and more