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THE ROLE OF THE GREEN VALUE CHAIN IN REDUCING COSTS AND ENHANCING SUSTAINABLE COMPETITIVE ADVANTAGE

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ABSTRACT

The study aims to demonstrate the green value chain technology as one of the management accounting techniques and its role in reducing costs and enhancing the sustainable competitive advantage in industrial economic units by analyzing the activities of the economic unit to green activities friendly to the environment and correcting these activities towards the requirements of the modern manufacturing environment, and to achieve the goal of this research The descriptive approach was used by designing a questionnaire as a main tool for collecting data and information and distributed to workers in a group of industrial companies in Iraq, and the data was analyzed using the statistical program spss, and the research reached the necessity of applying the green value chain as it is considered one of the green technologies in the companies.

Introduction

Organizations operating in a competitive, market-based environment have realized that the pressures and threats they face from their competing parties and from the governments and societies they work with, that they must adopt technologies and methods that enable them to adopt the

concept of sustainability in order to survive and continue in this competitive environment. Industrial companies have faced many problems resulting from environmental degradation as a result of toxic emissions and high production costs, and their application of traditional methods and techniques that have become unable to achieve a sustainable competitive advantage for these units and based on these problems a set of contemporary technologies that contribute to preserving the environment and achieving sustainability have emerged, including the Green value chain technology.

The green value chain aims to green all the main activities and convert the traditional activities of economic units into green activities, which differs from other technologies that focused only on contributing to the manufacture of green products and neglected the rest of the activities from an environmental point of view, and the green value chain also helps the management of economic units to achieve The optimal use of natural and mineral resources as well as the optimal consumption of electrical energy and the use of environmentally friendly green materials in production processes and recycling of products and waste, which in turn leads to achieving sustainable competitive advantage in all its dimensions as a result of taking into account environmental requirements during all stages of the value chain activities. Therefore, the study seeks to clarify the role of the green value chain in reducing costs and achieving a sustainable competitive advantage. The research problem is represented in the companies' use of the study sample of traditional technologies, which makes them suffer from waste and loss of their economic resources, which results in pollution in the environment that harms others and makes them lose the advantage of

competition, survival and continuity in the contemporary business environment in addition to the lack of management and insufficient awareness of the features of the value chain Green and its sustainable competitive advantage.

Study model: In order to find out the research variables, we adopted the default search model, as shown in Figure (1)

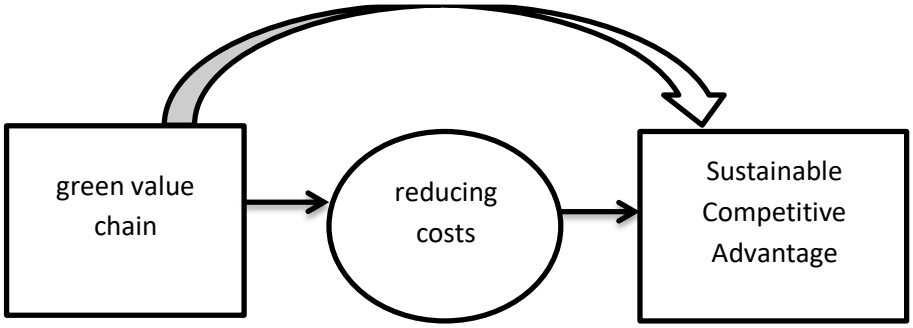

Figure 1 Theoretical Framework

Literature Review

First: the green value chain

The idea of the value chain is based on the scientific view of the economic units, and it is the idea of the vision of the manufacturing (or service) organization as a system consisting of subsystems that each have inputs, transfers and outputs, and inputs, conversion processes and outputs include the acquisition and consumption of resources (money, work, materials, equipment, buildings, lands, administration and organization) (Couto, et al., 2016: 2) The implementation of value chain activities determines costs and affects profits, and most economic units participate in hundreds or even thousands of activities in the process of transferring inputs to outputs. According to Porter (1985), these activities They can generally be classified as either primary or secondary (supportive) activities that all economic units must undertake (Cambridge University, 2017: 3). The term "value chain" according to the FAO viewpoint refers to "a group of interconnected economic activities and to a set of vertically related economic factors, and this depends on the scope of the study, and the focus of the analysis can be on activities or on agents. The value chain begins in the production of goods." This includes all economic activities that take place between these stages, such as processing, delivery, wholesale and retail (FAO, 2013: 3). The working group on green growth DCED, under the auspices of the International Labor Organization, launched its document (Green Value Chain) Green Value Chains) and it is one of a group of documents issued by it, as this document states that many products and services today pass through global value chains to reach the end user and enter in every stage of the chain a lot of natural resources that are finally used Therefore, the green value chain is a systemic approach to integrate environmental support functions, environmental rules and regulations and market actors to green the value chain, i.e. transforming now View of the conventional linearity of value chains The Cyclic View (2012: 1, DCED). The concept of the green value chain is one of the contemporary concepts, and the following is the most prominent presentation of the views that dealt with this concept, which he defined (Couto, et al., 2016: 2) as economic activities that are based on the sustainable use of natural resources, the optimal use of energy and the achievement of efficiency. And the effectiveness between inputs and outputs, as well as disposal of emissions and productive waste (FAO-FIBL, 2014: 3), it is mentioned as a group of environmentally friendly activities that seek to protect the environment, improve internal processes and apply pollution-free strategies to create green products that add value to the customer and achieve a sustainable competitive advantage. The implementation of the green value chain leads to achieving benefits for economic unity (Tan & Zailani, 2009: 239-240), including achieving a sustainable competitive advantage and continuing for the longest possible period in the market as a result of adherence to applicable environmental legislation and laws and meeting customer requirements by providing green products that are safe for human health and reducing rates. Pollution, et al João (2016). Reducing costs by reducing waste, toxic gases and fumes that lead to reduced fines and green taxes, as well as lower handling and maintenance costs due to the use of clean technologies. (Marimin et al, 2014), in addition to improving the quality of products through contracting with suppliers who take into account environmental requirements and

controls, as well as improving the quality and efficiency of production processes through the use of cleaner production techniques. (Erik, 2013: 87)) The green value chain consists of The activities shown in Figure (3):

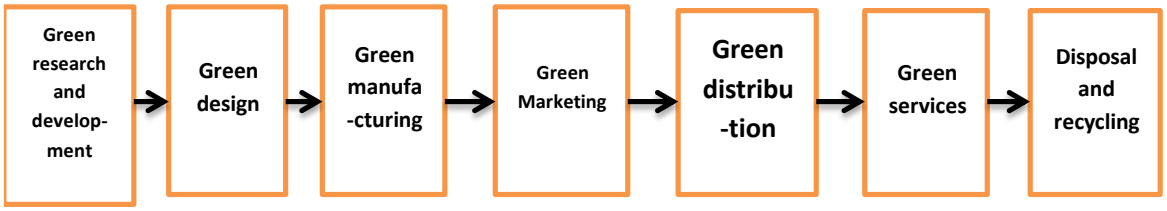

Figure (2) Green Value Chain Activities

A- Green research and development: It is a set of principles, tests and foundations needed to assist engineers in designing green products and green technologies represented in developing and testing products throughout their life cycle (Kung & Huang, 2014: 114) and is a major step in encouraging the transition to a green economy with low pollution and optimal consumption. Of resources, and that the economic units' use of scientific research and the previous experiences of other units leads to lower operating costs and improving the efficiency of operations and production to achieve high levels of performance (Ganda, 2017: 3-7).

B- Green design: is the change in traditional design procedures towards taking into account environmental requirements in an effective and systematic way, and green design aims to prevent pollution in production and manufacturing activities, reduce the volume of waste and recycle it, achieve a sustainable future and address environmental problems (Hendirckson, et al., 2012: 2)

C- Green manufacturing: The shift from traditional manufacturing systems and the move towards green manufacturing systems requires updating information technology and the presence of modern technologies as well as reforming the administrative system and organizational structure of the economic unit in a way that leads to the achievement of the goal (Wang & Shin, 2017: 2)

D - Green Marketing: The term green marketing (GM) first appeared in the 1980s by the American Marketing Association to create a positive effect on customer behavior towards products that are directed to remove the negative impact of other products that do not take into account environmental controls (Lee & Min, 2018)

E - Green distribution: It aims to reduce the emissions of gases emanating from the means of transport specialized in transporting products, and it does not necessarily mean the means of transportation, but rather includes the place from which the customer can purchase the product as it is intended to provide the products in environmentally safe places (Mahmoud, 2018: 128).

F-Green services: The economic units sometimes provide green after-sales services to customers to add value to the product, achieve a

competitive advantage over other units, and maintain product abundance and sustainability (Cocca & Canz, 2015: 183). Green services are known as one of the unit's activities. Economic that takes into account the environmental requirements in order to improve environmental performance with customers and reduce energy consumption and waste and recycle (Rady, 373: 2018)

G- Recycling or final disposal: includes the activity of reusing products and production wastes again to convert them from polluted products to products with an economic return, which in turn leads to achieving the sustainability of the materials (Dashisha, 1228: 2015). Recycling is defined as re-using the product again after Finalizing the use or parts of it as a raw material for the product itself or for other products (Al-Bakri, 2017: 14).

:**Second: Sustainable Competitive Advantage**

Sustainability has become one of the main priorities in the strategy that has been adopted in most economic units in the twenty-first century due to its long-term impact on the success of these units and in line with the requirements of the contemporary business environment. The term sustainability was used specifically in the eighties of the last century, which led the World Environmental Committee in 1987 to define it as "the continuous development of resources and their preservation to meet current needs without prejudice to the opportunities and needs of future generations" (Preston, 2016, p.26), but this definition It did not last for long, as it was known to (improve the quality of human life and ensure the ability to support the ecosystem) (Al-Bakri, 2017: 14). It was defined from the point of view of industrial enterprises as "an advantage or superior activity of the enterprise that is achieved if it follows a certain strategy to compete" (Wang & Shin, 2017: 7). It is the advantage that arises when the economic unit reaches the discovery of new ways that are more effective than those used by competitors, and thus it can be the activity of the institution's superiority in exploiting its sources of strength and following innovative strategies to add value to its products that competitors have not reached. (Bhowmik & Dahekar, 2014: 4) and that many studies have dealt with the sources of sustainable competitive advantage, as some have called them activities or dimensions of competitive advantages, and they are concentrated in one or more of the following sources (excellence, cost, time, innovation, growth, Alliances). Thus, it is clear that the sources of competitive advantages have become complex and multiple, as a result of the successive developments Figure (3) shows the important source of sustainable competitive advantage.

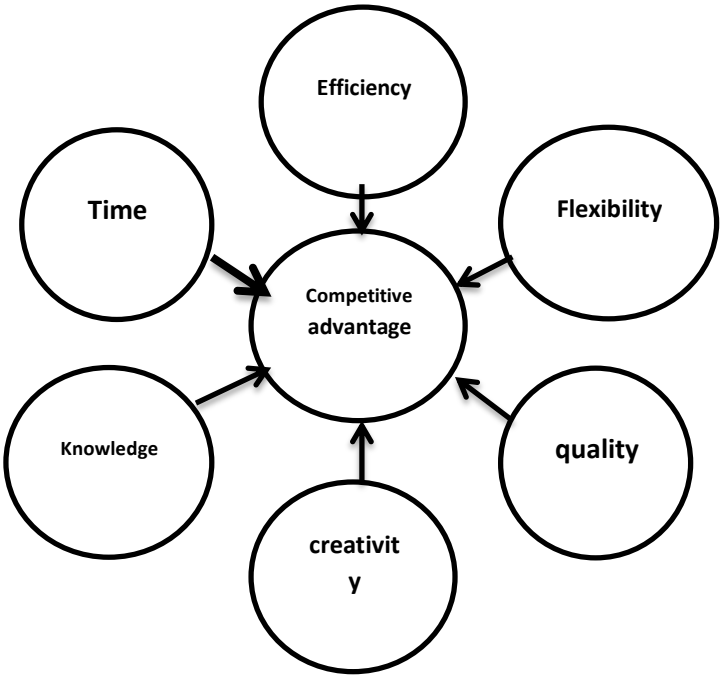

Figure (3) Sources of sustainable Competitive Advantages

StadyS hypotheses: The research adopted the following main and sub-hypotheses:

The first main hypothesis: There is a significant correlation between the activities of the green value chain combined and reducing costs to enhancement of the sustainable competitive advantage in the researched companies. And the following sub-hypothesis emerged from it:

-There is a significant correlation relationship between each activity of the green value chain alone with enhancing the sustainable competitive advantage in the surveyed factories.

The second main hypothesis: There is a significant influence of the green value chain combined in enhancing the sustainable competitive advantage in the researched companies. And the following sub-hypothesis emerged from it:

- There is a significant effect of each of the green value chain activities alone in enhancing the sustainable competitive advantage in the surveyed factories.

search methods

The main purpose of this paper is to examine the role of the green value chain in reducing costs and achieving sustainable competitive advantage. Production and account managers in 500 manufacturing companies in Iraq were selected as a sample for the study. About 960 questionnaires were distributed to managers and after one month, only 745 valid responses were received with a response rate of nearly 77.60 percent. A five-point Likert survey response scale was used for each answer. PLS-SEM was used to find results from the data. The measurement scale for all

alternative variables has been adopted from previous studies such as the dependent variable (competitive advantage), and contains five elements, and the independent variable (green value chain) has seven elements (de Guimarães, Severo, & de Vasconcelos, 2018). In addition, the researchers used statistical methods (simple and multiple correlation coefficient, determination coefficient R2, simple and multiple linear regression, F-test, T-test) in determining the correlation and influence relationship between research variables in order to extract conclusions. The questionnaire The scale was used (Cronbach's alpha) and its value was the aforementioned scale coefficient (0.879), which is a significant value at a significant level (0.05).

Results and Discussions

In order to determine the correlation relationship between the green value chain and enhancing the sustainable competitive advantage in the researched factories, this axis was devoted to verifying the possibility of accepting or rejecting the first main hypothesis and the sub-hypotheses emerging from it. Table (1) presents the results of the correlations between the green value chain(GVC) combined and enhancing the sustainable competitive advantage(SCA). In the searched factories.

Table (1): Results of correlations between the (GVC) and (SCA)

Dependent variable / independent variable	Green value chain activities
reducing costs	**0.834**
sustainable competitive advantage	**0.794**

Preparing researchers depending on the calculator program

Table (2) shows the existence of a significant correlation relationship between the green value chain combined and reducing costs is (0.834) and correlation relationship between the green value chain combined enhancing the sustainable competitive advantage at the level of the researched factories, as the total value of the correlation coefficient reached (0.794) at a significant level (0.05), and this is evidence of the strength of the relationship among these variables. This result is in agreement with the study (Li, et.al, 2017) in which they consulted that the application of green value chain activities leads to reducing negative impacts on the environment and enhancing sustainable competitive advantage.

Table (2) presents the correlation relationship for each activity of the green value chain individually and the enhancement of the sustainable competitive advantage at the level of the surveyed factories, according to what was stated in the sub-hypothesis emanating from the first main hypothesis.

Table (2): Results of the correlation between each individual green value chain activity and enhancing sustainable competitive advantage

Dependent variable

Independent

	Green value chain activities						
	Green research and development	**Green design**	**Green manufacturing**	**Green Marketing**	**Green distribution**	**Green services**	**Disposal and recycling**
Sustainable competitive advantage	0.783	0.701	0.751	0.713	0.891	0.802	0.785

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Table(2) shows the existence of a correlation relationship between each of the green value chain activities individually and the enhancement of the sustainable competitive advantage at the level of the researched factories at a significant level (0.05) as all the green value chain activities showed a strong positive correlation with the sustainable competitive advantage and this indicates the interest of the departments The factories surveyed in all the activities of the green value chain and that this interest will contribute to enhancing their sustainable competitive advantage. Based on the above, we accept the sub-hypothesis emanating from the first main hypothesis at the .level of the studied factories

With the aim of determining the effect of green value chain activities in enhancing the sustainable competitive advantage in the surveyed factories, this axis was devoted to ascertaining the possibility of accepting or rejecting the second main hypothesis and the sub-hypothesis emerging from it

Table (4) presents the results of the influence relationships of the green value chain activities combined in enhancing the sustainable competitive advantage in the surveyed factories.

Table (3): the results of the combined effect of the green value chain activities in enhancing the sustainable competitive advantage

Dependent / Independent	**Green value chain activities**		**R2**	**F**	
	B_0	B_1		**Calculated**	**Tabular**
Sustainable competitive advantage	0.534	0.721(*11.143)	0.796	**37.621**	**4.02**

Table (3) for the results of the regression analysis shows the existence of a significant effect of the combined green value chain activities in enhancing the sustainable competitive advantage, as the calculated value of (F) reached (37.621), which is higher than its tabular value of (4.02) at the level of

significance (0.05) and the degree of freedom 1.58) The coefficient of determination (R2) reached a value of (0.796), this means that (79.6%) of the explanation of the differences is due to the effect of the activities of the green value chain combined in enhancing the sustainable competitive advantage or the rest, the rest is due to random variables or variables not included in the model Regression, and we find the coefficients for the values of (B) and the test (T) showing that the calculated value of (T) of (11.143) is greater than its tabular value of (1.677) at the level of significance (0.05) and the degree of freedom (1.58). (Medina, et.al, 2011) in which they indicated that the application of green value chain activities in factories contributes to reducing environmental burdens in general and achieving the goals of sustainable competitive advantage and thus improving the state of .the natural environment. At the level of the factories surveyed

With the aim of clarifying the detailed impact relationships of the green value chain activities individually in enhancing the sustainable competitive advantage at the level of the researched factories, and in light of the sub-hypothesis stemming from the second main hypothesis, Table (5) shows the effect of each of the green value chain activities separately in enhancing the sustainable competitive advantage in Factories searched

Table (4): The effect of each green value chain activity on its own in enhancing the sustainable competitive advantage in the researched factories.

Dependent variable / Independent variable	B_0	Green value chain activities							R^2	F	
		Green research and development	**Green design**	**Green manufacturing**	**Green Marketing**	**Green distribution**	**Green services**	**Disposal and recycling**		**Calculated**	**Tabular**
		B1	**B2**	**B3**	**B4**	**B5**	**B6**	**B7**			
Sustainable competitive advantage	0.392	0.522 3.431*) (	0.456) 3.21 (2	0.422 *) 2.912	.0.398 *) 2.112	0.322 2.012)	0.365 *) (2.431	0.319 *) (2.812	* 0.824	* 42.342	2.28

Table (4) shows the existence of a significant effect of green value chain activities as independent variables in enhancing the sustainable competitive advantage as a dependent variable, as we find that the calculated value of F (42,342) is greater than its tabular value of (2,28) at two degrees of freedom (3, 56) and at a significant level (0.05) and the value of the determination coefficient R2 (0.824), which means that (82.4%) of the differences are explained by the effect of green value chain activities in promoting sustainable competitive advantage, and the rest is due to other variables that cannot be controlled or are not included in the Originally, regression and from following the values of the B parameters and testing their T, it was found that there is a significant effect for each of

the green value chain activities alone in enhancing the sustainable competitive advantage. It can be seen on the sequence of priority of this effect, which came at two degrees of freedom (3.56) and the level of significance (0.05).

Conclusions

Individuals of the industrial companies in the study sample have good experience and knowledge of the factory's work, in addition to the fact that most of them have a good scientific qualification that enables them to understand the questionnaire and deal with it accurately and correctly. It has been proven that there is a strong positive correlation that achieves and the presence of a strong and significant influence between the combined green value chain and enhancing the advantage. Sustainable competitiveness in factories, the research sample, and this indicates that factory departments are interested in green value chain activities, which will contribute to enhancing sustainable competitive advantage. The existence of a strong positive correlation relationship and the presence of a strong and significant moral effect between each of the green value chain activities alone and enhancing the sustainable competitive advantage in the factories research sample, and this indicates the interest of the factory departments in all activities of the green value chain and that this will contribute to enhancing the sustainable competitive advantage. Therefore, the researchers find - all workers in the economic unit that seeks to build the green value chain should be well prepared by including them in training courses in the field of the environment and getting acquainted with the latest developments in this field and the necessity of using environmentally friendly raw materials in packaging operations and dispensing with traditional materials to reduce to reduce Packaging material costs and financial savings. And the need to reduce distribution costs by storing products in designated and safe places to protect them from spoilage, providing safe distribution outlets that include both employees and customers, and applying contemporary green technologies, including green value chain technology, because of its clear role in enhancing the competitive advantage.

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