Environmental Innovation and its Relationship to Achieving Environmental Sustainability: An Applied Study in Al-Ittihad Food Industries Limited

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ABSTRACT

The current study aims to clarify the relationship between environmental innovation and environmental sustainability, as the study assumes that environmental innovation contributes to achieving environmental sustainability. For the purpose of testing the research hypothesis, the researcher distributed (300) questionnaires to workers at Al-Ittihad Food Industries Limited. (295) questionnaires were received and their ratings were good. (275) questionnaires were used for analysis, and the advanced statistical program SmartPLS was used. The study reached a number of conclusions, the most important of which is that the relationship between environmental innovations and environmental sustainability is positive and important. The research presented a number of recommendations, the most important of which is that agencies and institutions work with all relevant parties to encourage innovation. Environment to promote environmental sustainability.

Keywords : *Environmental innovation; environmental sustainability; Al-Ittihad Food Industries Limited.*

CHAPTER ONE: STUDY METHODOLOGY

First: the problem of the study

Interest in the issue of environmental sustainability has increased by many industrial and service business organizations alike, and it has become an essential factor within their strategies and represents a dilemma that requires searching for innovative solutions to it. The problem seems clearer the more the environmental foundations of sustainability are applied in competing organizations, which requires them to keep pace with all the changes taking place. In this area , in this context, many studies have provided recommendations about environmental innovation and proactive product development strategies as successful solutions that give a competitive advantage to organizations, and hence these variables can be represented as solutions for environmental sustainability. From the above, the problem of the study is summarized in the following question: How can green innovation be a driving force in improving the environmental performance of the organization in order to achieve environmental sustainability? The question arises from it as follows:

1- What is the nature of the relationship between environmental innovation in all its dimensions and environmental sustainability?

Second: The aim of the study

Through this study we seek to achieve the following goal:

1. Test the nature of the relationship between environmental innovation in all its dimensions and environmental sustainability?

Third: The importance of the study

The importance of the current study is evident in the following points:

1- It deals with new variables in business administration literature, represented by the independent variable environmental innovation and the dependent variable environmental sustainability.
2- To the best of the researcher's knowledge, there is no study that combined the variables of the current study into one hypothetical model
3- The scarcity of studies that dealt with the variables of the current study, in addition to the fact that they are among the decisive variables in the success of organizations.
4- Helping the organization, the study sample, in order to make the best use of the variables of the current study, which will contribute to the organization achieving success within its business environment.

Fourth: Study hypotheses

The current study attempts to test a set of hypotheses to achieve its goals, as follows:

The first main hypothesis: There is a statistically significant correlation between environmental innovation and environmental sustainability.

The first sub-hypothesis: There is a statistically significant correlation between green product innovation and environmental sustainability.

The second sub-hypothesis: There is a statistically significant correlation between green process innovation and environmental sustainability.
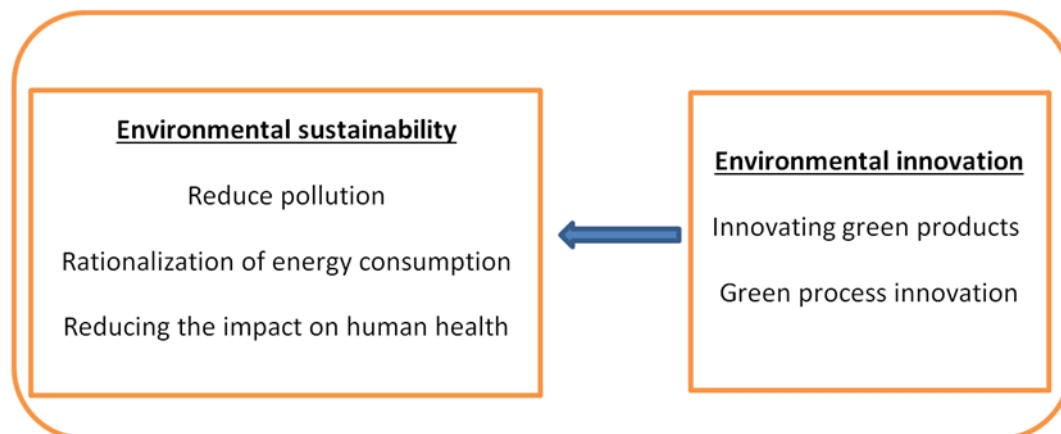
Fifth: Hypothetical outline of the study

Figure (1) : Hypothetical diagram of the study

CHAPTER TWO : THEORETICAL FRAMEWORK

The first topic (environmental innovation).

First: the concept of environmental innovation

The economic and technological development that the world witnessed after World War II brought great positive changes to the quality of human life and well-being. At the same time, on the other hand, these changes often resulted in damage to the quality of the environment, and problems of environmental pollution appeared in developed and developing industrial countries alike. (Song & Yu, 2018:55), and we have become living in a turbulent environment, and this turmoil is due to the introduction of modern developments that have had a significant impact on the emergence

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of new types of creativity and innovations, the most important of which is environmental innovation as a result of the turmoil in the work environment and environmental pressures (Mittal & Dhar, 2016). :22). Environmental innovation has become one of the contemporary approaches that began to be focused on when interest in the issue of environmental sustainability began (Sudaryati et al., 2020: 55).

Eco-innovation can be defined as the process of creating the new idea and converting it into new business value, or it is creativity (coming up with the new idea), implementing it, and reaching the market (Arena wt al., 2017:22).

Second: Dimensions of environmental innovation

A number of studies and research have agreed that environmental innovation generally consists of (Khazal and Dhiab, 2019: 139):

1) **Innovation in green products:** Green product innovation represents an introduction to new and greatly improved products, in line with technological and environmental innovation (Arfi et al., 2018:55), and basic improvements to products are included by relying on basic technical specifications, that is, applying innovative ideas in design, manufacturing and marketing. New products for the sake of environmental improvement of products (Iranmanesh et al, 2015:304) This includes modifying existing products in order to reduce negative impacts on the environment during the stages of the product's life cycle, as well as transferring the characteristics of green products abroad along with placing environmental labels to indicate them (Khazal and Dhiab, 2019:139).

2) **Innovation in green processes:** Innovation in green processes refers to modifying manufacturing processes and systems in order to produce products that are environmentally friendly and achieve environmental goals (Chen et al., 2015: 88). This is done through adaptation to the manufacturing process that reduces negative impacts on the environment. When purchasing materials, production, and delivery (Chiou et al., 2011: 824), and using innovative methods in order to reduce the negative environmental impacts resulting from production and related activities (Khazal and Diab, 2019: 139).

The second topic (environmental sustainability)

First: the concept of environmental sustainability

When tracing the topic of sustainability, we find it used for the first time in political language by the Club of Rome, an international union of scholars, business managers and public officials, in a report published in 1972 entitled "The limits to growth" (Attah, 2010: 7) Since then and until now, many researches and studies have been conducted on the topic of sustainability, but it still constitutes a concern for most business organizations and their leaders, because the sustainability of business organizations in conducting their work is a basic requirement for the survival, continuity, and development of the organization's work (Krause et al., 2016: 22) , concern for the environment has become one of the matters by which the development of countries and organizations in various fields is measured. Therefore, interest in preserving the environment has developed until there is environmental sustainability that is concerned with the extent of the ability to maintain environmental goals (Al-Azhar and Khalidi, 2018: 296).

Environmental sustainability is defined as a process that is taken into consideration, most of which is the result of the efforts and policies pursued by the state in order to enhance the ability of individuals, organizations, and the economy to achieve the required transformation process in organizations and the environment. The more effective, efficient, and integrated the policies are, the faster the development process will be and give the desired results (Rogers). et al., 2012:99).

Second: Dimensions of environmental sustainability

Both (Daoud and Jaber, 2014: 155) believe that the dimensions of environmental sustainability are represented in the following:

1) **Reduce pollution :** Although environmental pollution has been recognized for hundreds of years, it clearly emerged in the wake of the Industrial Revolution because it brought with it technological progress and the excessive use of production processes that are sometimes irregular (Jabbara, 2012: 2). The problems of environmental pollution have worsened in recent years, and interest has increased in trying to find ways to stop and mitigate their severity. The efforts of world organizations responsible for the environment and all international centers, research bodies and universities in countries around the world have joined forces to reach a world free of pollutants.

2) **Rationalizing resource consumption :** Rationalization of resource consumption preserves resources, namely consumable and productive materials, and development with available resources in accordance with sustainability and the term sustainability. The factor of environmental depletion is one of the factors that conflict with environmental sustainability. Therefore, there must be scientific management of natural resources that is interconnected with the environmental management system so that it reduces pressure. Accordingly, this is done by following a method concerned with how to exploit available resources economically in order to meet the current requirements of individuals as well as ensuring that the future requirements of future generations are met without causing any harm to the environment (Al-Azzawi and Al-Sabaawi, 2013:96).

3) **Reducing the impact on human health :** A person's health has its roots in his environment. Environmental conditions affect his reproductive characteristics, and also affect his growth, his exposure to infection, his infection with disease or protection from it, his treatment and immunization, his nutrition, and other aspects throughout his life. The effects of the environment, especially those arising from pollution, are called Human health depends on environmental health, which can be defined as "a state that provides a sound and stable environmental habitat for a certain type of living organisms, most notably humans, so that they can live their lives in a healthy manner and carry out their vital activities."

CHAPTER THREE: PRACTICAL SIDE

The first topic (descriptive statistics)

First: Descriptive analysis of the environmental innovation variable

Through the use of SPSS, the results of the descriptive analysis of the variable (environmental innovation) were reached as follows:

The first dimension: innovation of green products

The researcher extracted numbers, percentages, arithmetic averages, and standard deviations for the most important items on green product innovation from the point of view of respondents in the study's sample organization, as shown in Table (1).

Table (1) Results of the first dimension: green product innovation

Green product innovation paragraphs	Mean	Std. Deviation	Percentage
X1-1	4.19	0.756	83.801653
X1-2	3.74	0.883	74.710744
X1-3	3.71	0.978	74.214876
X1-4	3.53	1.133	70.578512
Average	3.79	0.93	75.801653
Green process innovation	Mean	Std. Deviation	Percentage
X2-1	3.56	1.007	71.239669
X2-2	3.57	0.956	71.404959
X2-3	3.77	1.039	75.371901
X2-4	3.77	0.955	75.371901
Average	3.65	0.994	73.090909

The statistics in Table 1 clearly show that, while grading the five-point Likert scale, the arithmetic mean for all scale items surpassed the predicted mean of (3) with a significant rate of (75.8%). As a result, this shows how evenly distributed every item is inside the organization that is being investigated. Furthermore, it shown The descriptive analysis's findings revealed very low coefficient of variation and standard deviation values, which attests to the respondents' replies' consistency.

The information in Table (1) also makes it evident that, when grading the five-point Likert scale, the arithmetic mean for every item on the scale surpassed the predicted mean of (3) with a significant rate of 73.0%. Consequently, this also shows the frequency of each item in the organization that is being looked into. The consistency of the respondents' replies is indicated by the descriptive analysis's comparatively low values for the standard deviation and coefficient of variation.

Second: Descriptive analysis of the dependent variable environmental sustainability

Through the use of the SPSS program, the results of the descriptive analysis of the environmental sustainability variable were obtained:

The first dimension: reducing pollution:

The researcher extracted numbers, percentages, arithmetic averages, and standard deviations for the most important items of reducing pollution, rationalizing energy consumption, and after reducing the impact on human health from the point of view of respondents in the organization sampled for the study, as is clear in Table (2).

Table (2) Results of the first dimension: reducing pollution

Pollution reduction items	Mean	Std. Deviation	Percentage
Y1-1	**3.87**	**0.903**	**77.4**
Y1-2	**3.57**	**0.956**	**71.4**
Y1-3	**3.72**	**0.951**	**74.4**
Y1-4	**3.54**	**0.841**	**70.8**
Y1-5	**3.98**	**1.033**	**79.6**
Y1-6	**3.94**	**0.859**	**78.8**
Y1-7	**3.6**	**1.013**	**72**
Y1-8	**3.72**	**0.977**	**74.4**
Average	**3.7425**	**0.94163**	**74.85**
Rationalization of resource consumption	Mean	Std. Deviation	Percentage
Y2-1	**3.714**	**1.566**	**74.28**
Y2-2	**3.8**	**1.188**	**76**
Y2-3	**3.72**	**0.951**	**74.4**
Y2-4	**4.04**	**0.841**	**80.8**
Y2-5	**3.56**	**0.991**	**71.2**
Y2-6	**3.88**	**0.976**	**77.6**
Average	**3.55**	**1.095**	**71**
Reducing the impact on human health	Mean	Std. Deviation	Percentage
Y3-1	**3.8**	**1.054**	**76**
Y3-2	**3.74**	**1.013**	**74.8**
Y3-3	**3.93**	**0.887**	**78.6**
Y3-4	**3.62**	**1.164**	**72.4**
Y3-5	**3.52**	**1.065**	**70.4**
Y3-6	**3.93**	**0.887**	**78.6**
Average	**3.75667**	**1.034**	**75.13333**

Table (2) makes it evident that, while grading the five-point Likert scale, the arithmetic mean for the first dimension outperformed all of the items in the scale for the expected mean of (4) with an importance rate of (74.8%). Consequently, this also shows the frequency of each item in the organization that is being looked into. The descriptive analysis's findings revealed very low coefficient of variation and standard deviation values, which attests to the respondents' replies' consistency. With an importance rate of (71.0%), the findings of the arithmetic mean for the second dimension exceeded all of the scale's items for the anticipated mean of (3) (at the five-point Likert scale gradation). As a result, this shows how commonplace each item is in the organization that is being investigated. Furthermore, the descriptive analysis's findings revealed very low values for the coefficient of variation and standard deviation, indicating that respondents' replies were consistent.

The results of the arithmetic mean for the third dimension: All items of the scale exceeded the hypothesized mean of (3) (at the gradation of a five-point Likert scale) with an importance rate of (75%). Therefore, this indicates the prevalence of all items in the organization under investigation. In addition, the results of the descriptive analysis showed low values. Relatively to the standard deviation and coefficient of variation, this indicates the consistency of the respondents' responses.

The second section: testing hypotheses

(Introduction) This research aims to test the correlations between the variables at the level of the overall indicator and at the level of the sub-factors in order to identify the strength of the relationship between the study variables and their nature. It then uses coefficients to test its hypotheses. This research is a continuation of the descriptive and diagnostic processes based on the descriptive analysis data and in harmony with the objectives of the study and to test its model. correlation and determining the correlation's significance using the T-test.

First: Correlation hypotheses

The first main hypothesis:

The values of Table (2) reflect the correlations between environmental innovation and environmental sustainability at the level of the overall index and sub-indices. The results indicated that the correlation between environmental innovation and environmental sustainability is a positive and significant relationship amounting to (0.427), and the calculated (T) value was greater than the value The tabulation level, as well as the level of significance, recorded an acceptable value and is smaller than (0.05). Hence, the first main hypothesis has been achieved, and with regard to the sub-hypotheses, they are as follows:

1) The first sub-hypothesis:

From reviewing the analytical results, it is clear that there is a significant positive correlation between green product innovation and environmental sustainability, amounting to (0.419), and the value of the significance level was an acceptable value and smaller than (0.05), and hence this hypothesis has been fulfilled.

2) The second sub-hypothesis:

The results indicated that the correlation between green process innovation and environmental sustainability is a positive and significant relationship amounting to (0.365), and the calculated (T) value was greater than the tabulated value, and the level of significance also recorded an acceptable value and smaller than (0.05). Hence, This hypothesis has been verified.

Table 3: Correlations between environmental innovation and environmental sustainability.

Variables	Environmental sustainability	Calculated t value	Tabular (t) value		sig level
			0.05	0.01	
Green product innovation	0.419 **	4.621	1.66	2.36	0.000
Green process innovation	0.365 **	3.211	1.66	2.36	0.000
Environmental innovation	0.427 **	4.725	1.66	2.36	0.000

Environmental innovation	0.400	0.183	22.215	3.59	5.75	0.000

THE FOURTH CHAPTER: CONCLUSIONS AND RECOMMENDATIONS

First: Conclusions:

1) The organization seeks to develop and introduce a large number of products with new forms or services to the market.
2) The researched organization is interested in research and development in order to provide new ideas about products and services.
3) The organization seeks to reduce the profit margin it achieves in order to follow a green operations method.
4) The organization's weak ability to carry out improvement and development processes on its products, as it makes simple modifications in the designs of its products that do not lead to increased customer demand for them.

Second: Recommendations

1) Working to focus on developing products in a way that suits the needs and desires of customers without harming the environment.
2) Spreading a renewed environmental culture among all employees and making them voluntarily move towards achieving green environmental goals.

3) Pay attention to training human resources according to a pre-prepared program, while conducting periodic evaluation to determine actual training needs.
4) The need for the organization to rely on a regular program for its product development processes that relies on proper planning in all its stages and aims to make fundamental improvements in product design that are compatible with the growing needs and desires of customers.
5) Supporting working individuals with creative and innovative ideas.
6) The necessity of adopting green products and working to implement their principles widely.

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