

The Appropriateness of the Performance of Jordanian Chemical Industrial Companies for the Accounting Basics on Sustainable Development

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Abstract

This study aimed to evaluate the environmental, social and economic performance of Jordanian Chemical Industrial Companies, to show the appropriateness of that performance with the accounting on sustainable development. A questionnaire was designed to study the practical side, it was distributed to a study sample of (10) companies from Jordanian Companies of Chemical Industries listed on Amman Stock Exchange until 31/12/2013. The questionnaire was designed for the purpose of arbitration on a group of professors and experts in the fields of accounting, management, environment and industry, as well as in the practical field of study.

The results of this study is that the commitment of departments of Jordanian Companies for Chemical Industries in applying sustainable development helps in measuring the financial and non-financial performance of the company, and that there is interest in the requirements of the improvement and development of performance and production that lead to profitability, maintain market share and achieve economic benefits for the environment and society.

The recommendations is the need that Jordanian Companies for Chemical Industries have to pay more attention to disclose about the procedures of applying the principles of sustainable development to increase the effectiveness and efficiency of evaluating and monitoring the performance of the financial and non-financial management periodically, and develop the capacities of the environment staff and technicians in the government departments concerned with the environment to assess the requirements of the surrounding community.

Keywords: Financial and Non-Financial Performance, Environmental, Social and Economic Performance, Accounting for Sustainable Development.

1. Introduction:

The concept of sustainable development appeared through the report of Brocland Commission on Sustainable Development in 1987.(WCED, 1987,P: 43) The concept has spread more in most countries of the world when the United Nations Conference on Environment and Development held in 1992, where more than 170 states agreed to adopt the sustainable development programs in their countries and imposed them on various companies to be applied. The Middle East region in general and Jordan in particular, have witnessed a rapid development recently in the diversity of its economic activities, which led to a direct impact on the environment, economy and society to establish a group of Arab Leadership for Sustainability in 2008, which meant to adopt standards of sustainable development, which imposed the basics of maintaining community and providing opportunities to work and compete in the global market.

<http://www.queenrania.jo/ar/community-empowerment/sustainable-evelopment>

The environmental, social and economic evaluation of the performance of companies is one of the most important topics of accounting administrative and costs in the current era. The larger Companies for Chemical Industries have criteria for evaluating their performance, the best express the successful performance of their management in the business market; it works on attracting qualified people scientifically and practically in the fields of accounting, management and performance evaluation, and therefore, the evaluation of the success of the companies' management s represents the financial and non-financial profitability standards represented in the social, economic and environmental performance, and maintain the related parties with businesses in general. (Euro Stat, 2001) and (European Commission, 2003 & 2001).

2. Problem of the Study :

Sustainable development reflects the environmental, economic and social costs incurred by the Jordanian Companies for Chemical Industries while practicing their usual work, and what are expected benefits and resources to achieve from this spending, which has led to study the basics of accounting for sustainable development in the Jordanian Companies for Chemical Industries and their role in evaluating the performance of their departments and decisions to assess the benefits and costs of sustainable development activities, determining the rate of return on investment, including the factors that prevent its application.

Therefore, it was necessary that the accounting works to narrow the gap between the concepts and clarify the management responsibility for their environmental, social and economic performance. This research aimed to study of the basics of applying accounting for sustainable development in Jordanian Companies for Chemical Industries and identify the factors and obstacles which prevent that application; the elements of the problem of the study were represented in a series of questions, which are:

- 1- What are the basics of measuring sustainable development in Jordanian Companies for Chemical Industries?
- 2- What are the factors that affect the application of sustainable development in Jordanian Companies for Chemical Industries?

3. Importance of the Study :

The importance of the study raised as it addresses a new topic from financial and administrative accounting topics, which focuses on assessing the financial and non-financial performance for the management of Jordanian Chemical Industrial companies. Sustainable development presupposes that the companies carry out their economic, social, environmental responsibilities and implement the work to serve the public interest and benefit employers and society as a whole; as well as it has become one of the important concepts for application in Companies for Chemical Industries. For its multiple benefits on the environment, society and economy, the accounting had to study the basics of applying sustainable development in companies and try to identify the factors and obstacles that prevent the benefits and the benefits of its application.

4. Objectives of the Study :

This study aimed to look at the basics of accounting for sustainable development and its application Jordanian Chemical Industrial companies, evaluate the performance of the management s of the Jordanian environmental, social, economic companies for Chemical Industries, and shed light on the factors and obstacles that prevent their application. The most important objectives of the study can be identified in the following points:

- 1- To clarify the basics of measuring sustainable development in Jordanian Chemical Industrial companies.
- 2- To identify the factors affecting the application of sustainable development in Jordanian Chemical Industrial companies.

5. Hypotheses of the Study

After the initial survey for the scientific and practical literatures which addressed the accounting topic for sustainable development, and to achieve the objectives of the study and to answer its questions, two hypotheses were put, namely:

The first hypothesis: there are no basics to measure the accounting for sustainable development in Jordanian Chemical Industrial companies.

The second hypothesis: there are no obstacles or limitations prevent the application of accounting for sustainable development in Jordanian Chemical Industrial companies.

6. The Theoretical Framework :

The World Commission for Environment and Development addressed the most important issues facing the environment, society and economy in most countries and represented by the concept of sustainable development for all activities (economic, environmental and social) which meet the needs of the present without compromising the ability of future generations to meet their own needs as the sustainable development is not a static state of harmony. (Brundtland Definition, WCED, 1987). The United Nations has formed the World Commission for Environment and Development; the Committee identified the concept of sustainable development as an alternative method based on the economic growth, work to meet the needs of the present without compromising the ability of future generations to meet their own needs. (United Nations Conference for Environment and Development, Rio de Janeiro Conference, 1992, pp: 3-14)

And thus, it is a process of change and exploitation of resources, direct investments and orientation of technological development, institutional changes that are in line with the future needs, as well as current needs. (Warhurst, 1998) confirmed his definition for sustainable development at the economic side containing the preservation of the natural capital, physical capital and social capital for individuals, companies and community.

The concepts of sustainable development consider a range of themes addressed by a group of researchers in more than three decades, at which they identified the concept and definition of sustainable development and the basics of applying them from various bodies that are working to maintain the financial and non-financial performance mentioned above - some of them dealt with the study of sustainable development from the concept of accounting as Accounting for externalities, others on Comprehensive accounting, Environmental cost accounting,

Environmental accounting or Green accounting and others¹⁰. (World Bank, 2012), (IMF, 2011), (OECD, 2010&2011), (UNIDO, 2011& 2009), (International Labor Conference, 2013), (UNEP, 2011. P: 16 and (WEF, 2012) and (United Nations Conference on Sustainable Development, 2012, paragraph 56).

The previous definitions for sustainable development emphasizes the conservation of natural resources available in the environment, find and develop appropriate technology to maintain it by the participation of various internal and external sectors associated with the company, in order to achieve and maximize the profitability of the companies and help boost the economy and welfare of the community, including employees in companies of various job categories. The accounting framework for sustainable development includes environment protection expenses, resource management, accounting of pollution and energy, used materials, costs of adapting with the deterioration costs on the macroeconomic level, as well as the benefits and damages resulting from it. With regard to environmental issues in financial accounting, information on the environment is listed in the financial reports as accounts record the inventory and inventory change in the stock of natural resources, income and expenses resulting from environmental investments, environmental expenses of the organization and any other expenses related to the environmental performance of the organization.

With regard to accounting of the administrative environment, environmental and economic management performance is evaluated through the administrative accounting systems that focus on physical information for flows of energy, water, materials and waste in addition to financial information about costs, income and savings; and with regard to financial and non-financial reports, financial environment information is used for the purpose of preparing mandatory reports about the environment, national reports, or voluntary reports about sustainable environment, as well as the use of the available information about the environmental management Accounting for the purposes of the mandatory environmental reporting and the preparation of voluntary reports for sustainable environment. (Al-Saffar, 2006), (IFAC, 2005), (Handbook of National Accounting, 2003), (Factors affecting the sustainable development on Kuwait, 2006), (Camilla and Pallemarts, 2009).

It is noted that sustainable development is a mixture that combines the environmental requirements, the individuals' requirements, the companies' requirements as well to achieve their goals and the challenges associated with achieving the goals of sustainable development, as the environmental, social and economic total cost, which corresponds to the expected benefits, require improving the quality of living conditions in ways that protect and promote individuals and facilities. The understanding and application of sustainability requires a new recognition to the world and its natural systems, understanding how our actions affect the resources and the future generations as well.

The Jordanian Society for Sustainable Development clarified the basics of applying sustainable development in Jordanian companies for Chemical Industries through cooperation with all relevant national, regional and international bodies for the protection and management of natural, economic, and social resources, exploit them in a sustainable manner and maintain them through sustainable development programs. Jordan's ability to achieve the overall objectives of sustainable development requires a national effort, as there is an urgent need for new initiatives to demonstrate national capacities, provide necessary information and data, provide provisions and financial resources to achieve them, as well as conducting studies and research on the environment and development, create a database to help all sectors in determining the optimal ways to achieve the sustainable development, and defend the principles of sustainable development in neutral way through supporting policies and approaches that achieve the sustainable development from whatever source (AL-Beshtawi and AL-Baqmi, 2014, p. 5).

7. Measurement Basis of Sustainable Development :

Sustainable development has addressed new dimensions to maintain the efficiency of their application in various types of companies, focused on the use of knowledge, bases of measurement, its management, and working on research and development which represented by three indicators that will assist in measuring sustainable development in the chemical industry companies. (AL-Beshtawi and AL-Baqmi, 2014, p.5).

- 1 - Renewal and growth indicators, which measure the ability of workers to improve profitability and increase customer loyalty.
- 2 - Stability indicators, which measure a company's ability to achieve competitive advantage and maintain the market share and even work to increase it.
- 3 - Efficiency indicators, which measure the rates of sales turnover, profit and loss indicators, indicators of the added value of the product, the employees and the company as a whole.

¹⁰ (Environment Canada, 1997) and (European Commission, 2001), (United Nations Conference on Trade and Development, 2001), (United States Environmental Protection Agency, 1995).

The annual environment report for Weyerhaeuser's in 1995 (Conference on Environmental Enrichment, 1995) shows some basics that clarify measuring sustainable development and its procedures, in terms of their effects on the environment, economy and society; they can be identified in three points, namely¹¹: (Ghoneim and Abu Zant, 2008), (Al-Ayeb, 2011, P. 34-36), (Al-Ghamdi, 2006).

- 1- Measure the achievement of financial and economic benefits, as well as the competitive advantage of companies applied for Sustainable Development.
- 2- Measure the achievement of the welfare for the community, individuals and preserve the environment.
- 3- Measure the development of indicators that measure the application of the principles of sustainable development in companies.

The judgment on the success the applying the sustainable development in the chemical industry companies is represented by assessing the financial reports prepared by those companies through four main sections; they can be clarified as the following:

Section 1: The Environment: They measure the ability of the company to use the available resources without causing pollution effects on individuals, nature and animals, etc, or waste effects on the material wealth found in nature in various forms or causing an imbalance in the components of the environment through the balanced management for natural resources.

Section 2: The Economy: They measure the ability of the company to improve and develop presenting their products through its training and development programs to improve the efficiency and effectiveness of their employees and achieve sustainable economic growth, in a way that achieves the welfare of the community members, increases the rates of income, and achieve financial and non-financial profits of the company, through maximizing profits, maintaining the market company share, giving it the ability to overcome the high competition prevailing in the market, and maintaining the loyalty of customers for their products.

Section 3: The Community: They measure the ability of the company to draw the policies that organize the company's relationship with the civil society sector in terms of contribution to the development of human and material energy in society, exploiting them in a way that leads to the efficient performance in the future, achieving equality in the distribution of income, stabilizing the demographic growth and making it balanced with economic growth.

Section 4: The Development of Measurement Indicators: (Mazur, 2012), (UNEP and SETAC, 2009) and (Ciroth and Franze, 2011)

We notice from the previous sections that the basics of applying the sustainable development are connected together; each section depends on the other to achieve its results. The Financial section depends on economic factors which depend on the community of its human and material energies, as well as on the environment and the space at which its natural resources can be exploited to do various business in it; all that are affected by individuals, their desires and physical abilities to pay. Therefore, the basic of success of sustainable development is achieved through consensus and harmony between these sections to ensure applicable technical progress before the competition to achieve social and economic benefits.

8. Factors that Affect Applying Sustainable Development :

Despite the multiple benefits that companies can achieve as a result of applying sustainable development, the concept is still dominated by a kind of ambiguity on one hand, and opposition to fully application - on the other hand; the determinants that surround accounting information systems make decision-making process difficult, as it leads to inability to provide sufficient or information or inaccurate misunderstood data, which is reflected negatively on the performance of companies towards the environment and society, as well as the measurement of the costs and the potential benefits to be achieved. Among the most important factors affecting the application of sustainable development are: (Loew and et al, 2003), (International Labor Conference 0.2013) and (AL-Ayeb, 2011, pp: 41-62).

1- Social Responsibility :It shows the relationship between the company and sustainable development; the weakness of social accounting issue for companies interested in the Application of sustainable development; as it is known among various segments of society that the social responsibility is for the parties inside the company; and according to the concept of sustainable development, it focuses on the relevant parties with companies, whether the parties are internal or external such as the society and the environment, in order to produce valuable goods to the community with reasonable costs and good qualities, and achieve the required benefits and profitability by the departments of companies while maintaining the benefits of the surrounding community.

1- Performance Management :The increased attention by companies' management to develop performance for obtaining profit, and maintain the market share without paying attention to the impact of that performance on the economy, the environment and the society, as well as the creation of equal job opportunities for all, without change due to race, nationality or others, which lead to poor attention to the requirements of the improvement

2 (ILO and OECD, 2012,P: 17–18), (Dobbs et al , 2011), and (International Labor Conference, 2013).

and development of the parties associated with the production process, especially those with a direct impact on the economy, environment and society. It must be done in light of compliance with laws and regulations under which they operate, as the community expects that the companies take care of the ethical responsibilities assigned to them, as it must take into account justice and honesty in their dealings with all parties associated with them.

2- Learning and Growth: The weakness of scientific and practical abilities of external parties affected by the production process; as the staff and the technicians of the environment department do not have sufficient knowledge that enables them to assess the requirements of the environment and the surrounding community by production companies for chemical industries, as well as the cultural differences between members of the community due to the fact that companies are spread in different areas of knowledge and different qualification from one area to another. These factors increase by influence if the accountants have limited knowledge in accounting information for the benefit of environment, society and economy, such as treatment of waste associated with the production processes, and the basics of its mandate and disposal.

3- The lack of accounts and records of environmental costs within the company's accounts: The internal financial reports and accounting records lack the classification of the different environmental costs that has been spent on the production processes until the product is ready for sale, as the costs of intangible environment leading to the weakening of the ability of companies' management to measure their environmental performance and identify necessary indicators to assess the environmental performance of the company and its impact on society.

4- The lack of flow costs data within the product life cycle: The inability of the accounting system to process information and data related to environmental, economic and social performance of the company makes it difficult to determine data volumes involved and actually used in the production, and analyze the elements of the costs of environmental performance and its classification in order to determine their relationship to the life cycle of the product and load them on productive activities.

5- The lack of needed data to make investment decisions: Inability to choose the materials involved in the production of environment friendly and determine its cost and pricing that reflects the accurate calculation, and determine the desired profit which leads to lack of help by the outputs of the system in securing economic and financial stability and identifying risks and environmental liabilities; as the company is not interested in the management of environmental costs in spite of the massive spent money in order to prevent negative environmental impacts, or remove environmental waste resulting from the harmful decisions and actions to the environment. (Shehadeh, 2010, p 274).

9. The practical aspect of the study:

9.1 First: the community and the sample of the study: The study community included Jordanian Companies for Chemical Industries (10 companies) (ASE, Business directory for 2013, Annual Statistical Bulletin, <http://www.ase.com.jo>). The questionnaire has been designed divided into three areas. The first dealt with the demographic characteristics of the study sample; while the other two areas dealt with checking and testing the hypotheses of the study. The questionnaire has been presented for the purpose of arbitration on a group of professors who are specialized in the field of study and a group of experts in the fields of accounting, management, environment and industry. After modifying the paragraphs of the questionnaire commensurate with their ability to check and test the hypotheses and achieve their goals, it was distributed to the members of the sample (60) people, (50) were returned and analyzed by statistical software package SPSS.

9.1.2 Second: the statistical methods used in the analysis of the data:

In order to achieve the objectives of the study and test its hypotheses, the two researchers used a range of statistical methods applied and adopted in this area, including:

- 1 - Arithmetic means and standard deviations for the analysis of the respondents' answers.
- 2 - Test the stability of the respondents' answers.
- 3 -One Sample T-Test: to test the hypotheses of the study and test whether there is a statistically significant difference between the arithmetic mean of the hypotheses and the average of measurement tool.
- 4 - Chi-square test.

9.1.3 Third: the study tool:

Five Point Likert scale has been used to show of the descriptive views of respondents. The study tool was developed to express the goals of the study on sustainable development and show the requirements, principles and basis of its application in the Jordanian Chemical Industrial companies as well as obstacles that limit or prevent achieving the benefits of it.

Table (1) shows the quantitative answers, as follows:

Strongly agree	4-5
Agree	3-3.99
Neutral	2-2.99
Opponent	1-1.99
Strongly opponent	0-0.99

The level of importance of the respondents' answers to the questionnaire paragraphs indicates the level of their consent and awareness of the paragraphs as follows:

High	3.67- 5
Average	2.34- 3.66
Weak	2.33-1

The scale was calculated by using the following equation: (maximum limit of the scale (5) - Minimum limit of the scale (1)) / number of required categories (3), and then added the answer (1.333) on the final of each category.

9.1.4 Fourth: testing the validity of the study tool:

The virtual sincerity of the questionnaire was tested by distributing it on a group of experienced arbitrators in the field of teaching and work. Regarding the reliability of the study tool, its persistence has been confirmed by counts and the total reliability coefficient is (0.91), where it exceeds (Cronbach Alpha) coefficient of the acceptable rate (60%), it means the possibility of adopting the results of the questionnaire and ensures its credibility in achieving the objectives of the study.

The paragraphs of the questionnaire are (38) paragraphs include all the variables of the study, as follows: -

- 1- Paragraphs (1-18) measure the basics for measuring accounting for sustainable development in Jordanian Chemical Industrial companies.
- 2- Paragraphs (19-38) measure the obstacles or limitations preclude accounting for sustainable development in Jordanian Chemical Industrial companies.

9.1.5 Fifth: The analysis of the sample responses:

The first area: the analysis of the demographic characteristics of the sample:

Table 2 shows the demographic characteristics of the study sample by gender, qualification, specialization, job experience, Job position

	Variable	Number	Percentage
Gender	Male	45	%90
	Female	5	%10
	Total	50	%100
Qualification	Diploma	5	%10
	Bachelor	36	%72
	Masters	7	%14
	Ph.D	2	%4
	Total	50	%100
Specialization	Accounting	30	%60
	Business administration	12	%24
	Operation and product management	7	%14
	Others	1	%2
	Total	50	%100
Job experience	Less than 5 years	9	%18
	5- less than 10	29	%58
	10- less than 15	10	%20
	15 years and more	2	%4
	Total	50	%100
Job position	Accountant	20	%40
	Financial manager	5	%10
	Head of division	16	%32
	Head of department	9	%18
	Total	50	%100

Table (2) shows the high proportion of male which is (90%) and this indicates the nature of the work assigned to males than females. The highest percentage is for the qualification at a proportion of (72%) of the bachelor's degree holders and a total of (90%) for the bachelor's degree holders and higher, this shows that the individuals in the sample of the study are qualified. With regard to the specialization, (60%) is for accounting, (24 %) for business administration, and (14 %) for operation and product management, which indicates the efficiency of the sample individuals and their ability to do the paragraphs of the questionnaire because it has a direct link with their qualifications and their careers. This was emphasized after the analysis by the fact that 82% of them have practical experience of five years or more, it also showed their ability to answer, and the suitability of their specializations and qualification which they have. The analysis showed that the proportion of (50 %) is for those in the accounting and finance department, (32%) occupy the position of head of division, either accounting departments or production and service operations departments and others, etc., and the proportion of (18 %) are those who occupy the position of head of department represents the previous sections mentioned above.

9.2 Results and analysis of the first hypothesis:

There are no bases to measure accounting for sustainable development in Jordanian Chemical Industrial companies.

Table (3) the arithmetic mean and standard deviation for the degree of **sample's** approval on the basis of measuring the accounting for sustainable development in **Jordanian Chemical Industrial companies.**

No.	Paragraphs	Arithmetic Mean	Standard Deviation	Importance Level
1	The application of sustainable development leads to determine the standards of financial profitability of industrial companies in Jordan represented in the measurement of financial performance of their management while maintaining the related parties with the company.	3.8200	1.22374	High
2	The application of sustainable development in Jordanian Chemical Industrial companies requires disclosure of procedures to be applied for the basics and principles of sustainable development to measure the financial and non-financial performance of the administration by measuring the ability of the company's management to maintain their environmental and social performance represented by standards related to the environment and society.	2.8800	1.31925	Average
3	The application of sustainable development in Jordanian Chemical Industrial companies leads to assistance in measuring the financial and non-financial performance of their administration by measuring the	3.7000	1.35902	High

	company's ability to maintain the standards related to the economy.			
4	The application of sustainable development in Jordanian Chemical Industrial companies reflects the efficiency of companies' management in the use of knowledge, measurement bases and working on research and development in them.	4.3200	1.03884	High
5	The application of sustainable development in Jordanian Chemical Industrial companies gives indicators to measure the growth and renewing, which measure the ability of workers to improve profitability and increase customers' loyalty.	3.5400	1.12866	High
6	The application of sustainable development in Jordanian Chemical Industrial companies gives indicators to measure the stability which measures the company's ability to achieve the competitive advantage and maintain the market share.	4.3200	.99877	High
7	The application of sustainable development in Jordanian Chemical Industrial companies leads to help in measuring the rotation rates of the product sales and the company as a whole.	4.0200	1.18649	High
8	The application of sustainable development in Jordanian Chemical Industrial companies leads to help in measuring the indicators of profit and loss of products' sales.	3.1200	1.31925	Average
9	The application of sustainable development in Jordanian Chemical Industrial companies leads to help in measuring the indicators of the	4.3400	.82338	High

	value added to the employee, product and company as whole.			
10	The sustainable development in Jordanian Chemical Industrial companies enhances its ability to measure management's ability to achieve financial and economic benefits for the company.	3.5000	1.35902	Average
11	The application of sustainable development in Jordanian Chemical Industrial companies enhances the measurement of management's ability to achieve the social welfare of society and individuals.	4.4200	.99160	High
12	The application of sustainable development in Jordanian Chemical Industrial companies enhances the measurement of the management's role in preserving the environment.	3.6000	1.17803	Average
13	The application of sustainable development in Jordanian Chemical Industrial companies measures the ability of the management to use the available resources without having the effects of pollution on people and nature.	3.8600	1.01035	High
14	The application of sustainable development in Jordanian Chemical Industrial companies measures the ability of the management not to make any waste in material wealth found in nature on its various forms.	3.7000	.99488	High
15	The application of sustainable development in Jordanian Chemical Industrial companies measures the ability of the management to ongoing improvement and development in the submission of its products through its training and development programs to improve the	3.7400	.94351	High

	efficiency and effectiveness of their employees, and to achieve sustainable economic growth.			
16	The application of sustainable development in Jordanian Chemical Industrial companies measures the ability of the management to find policies that organize the company's relationship with sectors of civil society and exploit them in a way leads to the efficiency of future performance and the achievement of equality in the distribution of income, make it balanced with economic growth as well.	3.6200	1.24360	Average
17	The application of sustainable development in Jordanian Chemical Industrial companies measures the ability of the management to make applicable technical progress in the stage before the competition and achieve the economic, social and environmental benefits.	3.8000	.96890	High
18	The application of sustainable development in Jordanian Chemical Industrial companies measures the ability of the management to boost the economy and welfare of the community, including employees in companies at various job categories.	4.1200	.91785	High
	Total	3.8011	.58538	High

The answers of respondents on paragraphs (2), (8), (10), (12) and (16) in table (3) above, came at the average level in terms of the relative importance and Arithmetic Mean of (2.8800), (3.1200), (3.5000), (3.6000) and (3.6200) respectively, and standard deviations of (1.31925), (1.31925), (1.35902), (1.17803) and (1.24360) respectively. This emphasized the acceptance of the sample for the role of the basics of applying the sustainable development in Jordanian Chemical Industrial companies in maintaining their environmental and social performance in order to achieve the financial and economic benefits of the company, and that by measuring the rates of sales turnover and indicators of profit and loss of product sales, disclosure of bases of applying the principles of sustainable development in order to increase the effectiveness and efficiency of evaluating the financial and non-financial performance of companies' management related to the environment and society, as well as showing its ability to maintain the standards related to the environment, society and economy; moreover, its interest in the development of policies that organize the company's relationship with sectors of civil society in order to achieve the efficiency of future performance to boost the economy and achieve equality in the

distribution of income, make it balanced with the economic growth and preserve the environment, which lead to the welfare of society and individuals. The standard deviations have shown the degree of difference between the answers of the respondents, which emphasizes the acceptance of the answers to show the opinion and the degree of reliability.

While the answers for the rest of the paragraphs came with a high level, as arithmetic means and standard deviations showed the rates ranging between (4.4200) and (3.7000) and standard deviations ranged between (0.99160) and (0.99488), and that emphasizes the basis of the application of sustainable development in Jordanian companies to measure the ability of management to ongoing improvement and development in the submission of its products through its training and development programs to improve the efficiency and effectiveness of their employees and to achieve sustainable economic growth, as well as enhances the ability of management to measure management efficiency in the use of knowledge and work to find programs for the development and improvement in the methods of production to achieve growth and innovation, to raise the capacity of workers and employers to improve productivity, profitability and increase customer loyalty to achieve the competitive advantage and maintain the market share. In addition, it shows the measurement basis of sustainable development in Jordan Companies for Chemical Industries by measuring indicators of added value for the employee, the product and the company as a whole to achieve the financial and economic benefits for the company, which lead to the welfare of society and the individuals, the optimal and balanced use for the available resources without having pollution effects on individuals and the nature, as well as not to waste material wealth found in nature on its various forms. The standard deviations have shown the degree of difference between the answers of respondents, which emphasizes the acceptance of the answers in showing the opinion and the extent of adopting them.

9.3 Results and analysis of the second hypothesis:

There are no obstacles or limitations prevent the application of accounting for sustainable development in **Jordanian Chemical Industrial companies.**

Table (4) the arithmetic mean and standard deviation for the degree of **sample's** approval **on** obstacles or limitations prevent the application of accounting for sustainable development in **Jordanian Chemical Industrial companies.**

No.	Paragraphs	Arithmetic Mean	Standard Deviation	Importance Level
19	The lack of clarity in the concept of sustainable development and the requirements of its application lead to oppose adopting its application in some of Jordanian Chemical Industrial companies	4.4400	.83690	High
20	The lack of interest, by the management of Jordanian Companies for Chemical Industries, in doing their social responsibility is reflected negatively on the society and environment, and therefore the non-application of sustainable development Jordanian Chemical Industrial companies.	3.6800	1.44900	High

21	Determinants and obstacles surrounding the accounting information systems help in reducing the application of sustainable development in Jordanian Chemical Industrial companies, due to the lack of adequate information and data related to the community, the environment and the requirements of social welfare or inaccuracies, inaccuracy or misunderstanding.	4.5000	.97416	High
22	Weak understanding of the relationship between the company and sustainable development helps to impede the application of sustainable development companies of Jordanian Chemical Industries	3.8400	1.23487	High
23	The weakness of company's social accountability of professional organizations interested in the application of sustainable development, and governments lead to disability in applying sustainable development in Jordanian Chemical Industrial companies.	4.0600	1.01840	High
24	The managements of Jordanian Chemical Industrial companies are interested in achieving financial profitability and benefits without paying attention to the preservation of the benefits of the surrounding community and environment which limit the application of sustainable development in Jordanian Companies for Chemical Industries.	3.9600	1.08722	High
25	The lack of concentration on the interests of the parties which have a relation with the companies, whether internal or external, such as the society and the environment, is one of the factors that help to reduce the application of sustainable development in Jordanian Chemical Industrial companies.	3.8800	1.02300	High
26	The lack of interest of the companies departments' in producing high value-added goods to the community with reasonable costs and good qualities is one of the factors that help to reduce the application of sustainable development companies in Jordanian Chemical Industrial companies.	3.7600	1.28667	High
27	The Interest of the company's management in the development of performance that achieve the profitability and maintain the market share without focusing in performance on the economy and provide equal employment opportunities for all, weakens attention to apply sustainable development in Jordanian Companies for Chemical Industries.	3.9800	1.05926	High

28	The Interest of the company's management to develop the performance that achieve the profitability and maintain market share without focusing I performance on the environment and society, weakens attention to apply the sustainable development in Jordanian companies for Chemical Industries.	4.3400	.91718	High
29	The lack of attention to the requirements of improvement and development for the Parties associated with the production process, particularly those with a direct impact on the economy, hinders the application of sustainable development in Jordanian Companies Chemical for Industries.	4.4600	.83812	High
30	The lack of attention to the requirements of the improvement and development of the Parties associated with the production process, particularly those with a direct impact on the environment and society, lead to disability in applying the sustainable development in Jordanian Companies for Chemical Industries.	3.8200	1.42414	High
31	Weak commitment of companies' managements to the laws and regulations under which they operate, limits the application of sustainable development in Jordanian Companies for Chemical Industries.	4.5200	.97395	High
32	The lack of interest of companies' management in moral responsibilities assigned to them, such as considering justice and honesty in their dealings with all parties associated with them, indicate a weak interest in the application of sustainable development in Jordanian Companies for Chemical Industries.	3.9000	1.21638	High
33	Weakness of the scientific and practical abilities of the external parties affected by the production process and the different cultures between members of the community help companies not to commit in applying sustainable development in Jordanian companies for Chemical Industries.	4.1200	.98229	High
34	The inability of the environment employers and technicians to assess the requirements of the environment and the surrounding community to chemical companies' production helps the companies' managements not to apply the sustainable development.	4.0200	1.05926	High

35	Limited knowledge of Accountants in accounting information of public interest for the environment, society and economy, such as treatment of rubbish associated with the production processes, and the basics of its mandate and disposal, hinder the application of sustainable development in Jordanian Companies for Chemical Industries.	4.0000	1.01015	High
36	The internal financial reports and accounting records lack the classification of the various environmental costs that have been spent on production processes, emphasize the weakness or not applying the sustainable development in Jordanian companies for Chemical Industries.	3.9400	1.23569	High
37	The lack of flow costs data within the product life cycle makes it difficult to determine the involved quantities and the data actually used in production, and thus limits the application of sustainable development in Jordanian companies for Chemical Industries.	4.1400	1.01035	High
38	The lack of data needed to make investment decisions, especially those related to the selection of materials used in the environment friendly production and determine the cost and pricing that reflects the accurate calculation, and determine the profit margin required to limit the application of sustainable development companies in Jordanian companies for Chemical Industries.	4.4000	.90351	High
	Total	4.0880	.82534	High

Despite the diversity of paragraphs in table (4), sometimes negative and positive other times - and that is an attempt by the two researchers to measure bias in the answers of respondents - but the answers came at a high level of importance, which emphasized that there are factors limit the application of sustainable development of Jordanian Chemical Industrial companies, or at least weaken the interest in applying it. The answers of arithmetic means ranged between (4.5200) and (3.6800) and standard deviations ranged between (0.97395) and (1.44900) emphasized the weakness of understanding the relationship between the company and the sustainable development, as well as the lack of interest in social responsibility by the managements of Jordanian Chemical

Industrial companies is reflected negatively on society and the environment, and therefore they do not apply the sustainable development of Jordanian Chemical Industrial companies which leads to a lack of interest in the provision of adequate information and data related to the society and environment, and thus weakens the social accountability for companies by governments and professional organizations concerned with the application of sustainable development. Moreover, the companies are interested in developing the performance that leads to profitability that protect the market share without focusing in performance on the economy, environment, society and the requirements of the improvement and development associated with the production process, particularly those with a direct impact, and the lack of interest in the selection of materials for the production of environment friendly, determine the cost and pricing that reflects the accuracy of its calculation and determine the required profit margin to provide flow of costs data within the product life cycle, which makes it difficult to determine the data of quantities involved and actually used in production, and thus limits the application of sustainable development of Jordanian Chemical Industrial companies .

The answers indicated the lack of clarity of sustainable development concept and the requirements of its application, inadequate accounting information systems for sustainable development requirements and procedures for its application lead to oppose the adoption of its application in some Jordanian Companies for Chemical Industries, and that the interest of companies in achieving the financial benefits, profitability and lack of concentration on the interests of the parties that have a relationship with the company and the community and their needs for value-added goods and good quality, lead to the creation of obstacles that challenge the application of accounting for sustainable development.

This on the one hand; on the other hand , the weakness of compliance with laws and regulations under which the companies operate, the limited knowledge of Accountants in accounting information which has value for the environment , society and economy, the cultural differences between members of the community, the lack of classification in the internal financial report, accounting records and the classification of different environmental costs, and the inability of the staff and technicians to assess the requirements of the environment and the surrounding community with the products of chemical companies, all help the companies not to concern about the application of sustainable development which lead to disability in applying sustainable development in the chemical industry companies.

The standard deviations have shown the degree of differences among the answers of the respondents, which emphasizes the acceptance of the answers in opinion and the degree of adopting them.

9.4 Testing the Hypotheses of the Study:

9.4.1 Testing the first hypothesis:

There are no bases to measure accounting for sustainable development of Jordanian Chemical Industrial companies.

Table (5) The results of the third hypothesis

Calculated T	Tabulated T	Significant T	Result
9.677	2.0096	0.000	Reject

ONE SAMPLE T-TEST was used to test the hypothesis mentioned above; the results of the analysis in table (5) show that the value of (calculated T) at the arithmetic means (2.34-3.66) equals (9.677) with a statistical significance (0,000) and at the highest value of (Tabulated T) which is (2.0096), a value statistically significant at the level of statistical significance of ($\alpha = 0,05$). Accordingly, we reject the null hypothesis (H₀) and accept the alternative hypothesis, which states: there are basics to measure accounting for sustainable development in Jordanian Companies for Chemical Industries.

9.4.2 Testing the second hypothesis:

There are no obstacles or limitations prevent the application of accounting for sustainable development of Jordanian Chemical Industrial companies.

Table (6) The results of the third hypothesis

Calculated T	Tabulated T	Significant T	Result
9.321	2.0096	0.000	Reject

ONE SAMPLE T-TEST was used to test the hypothesis mentioned above; the results of the analysis in table (6) show that the value of (calculated T) at the arithmetic means (2.34-3.66) equals (9.321) with a statistical significance (0,000) and at the highest value of (Tabulated T) which is (2.0096), a value statistically significant at the level of statistical significance of ($\alpha = 0,05$). Accordingly, we reject the null hypothesis (H₀) and accept the alternative hypothesis, which states: there are obstacles or limitations prevent the application of accounting for sustainable development in Jordanian Companies for Chemical Industries.

To test the extent of the differences in the answers related to each hypothesis of the study hypotheses, chi-square test was used; it found that the value of X2 for each hypothesis statistically significant at the 0.05 level, which indicates the existence of differences in the answers about each hypothesis. Table 7 shows this result:

Table (7) shows the results of chi-square test for testing the differences among respondents

Hypothesis	X2	sig	Result
1	13.600	.993	There are differences
2	51.000	.001	There are differences

Table (7) shows that the answers of respondents on the four hypotheses' paragraphs came with differences and divergence among their views, and this indicates that the different demographic characteristics in general and the academic qualifications in particular - among the members of the sample lead to a difference in their opinions and responses to various paragraphs of the questionnaire, which enhances the credibility and reliability of the results that have been adopted in testing the hypotheses.

10. Results and Recommendations:

10.1 Results: The sustainable development helps in the application of the concept of social responsibility of Jordanian Chemical Industrial companies and the commitment to achieve a good atmosphere for the social welfare of the staff and members of the community, which reflect its ability to produce valuable goods to society with reasonable costs and good qualities.

- 1- Commitment to social responsibility of Jordanian Chemical Industrial companies lead to maintain the benefits of the surrounding community and the environment and maintain the related parties with the companies, whether internal or external parties such as the society and the environment.
- 2- One of the basics of applying sustainable development of Jordanian Chemical Industrial companies is to urge the management to improve and develop in producing their products through the adoption of training and development programs to improve the efficiency and effectiveness of their employees and evaluate management's ability to use knowledge to achieve the competitive advantage of the company, maintain the market share as well.
- 3- Achieving measurement basis for sustainable development of Jordanian Chemical Industrial companies for the balanced and optimal use of available resources.
- 4- The application of sustainable development of Jordanian Chemical Industrial companies helps in measuring the financial and non-financial performance of companies, which leads to maintain profits and achieve economic benefits for the environment and society.
- 5- Sales turnover rates and indicators of profit and loss of Jordanian Chemical Industrial companies can be measured, and thus determine the value-added indicators for the employee, the product and the company as a whole through the application of sustainable development.
- 6- The company's relationship with the community and preserve the environment can be organized through the application of sustainable development, which leads to efficient future performance of companies about the distribution of income and make it balanced with economic growth.

10.2 Recommendations:

- 1- The need to increase the interest of Jordanian Chemical Industrial companies to disclose procedures for applying the principles of sustainable development to increase the effectiveness and efficiency of evaluating and monitoring the financial and non-financial performance of the company periodically.
- 2- The development of scientific and practical capabilities of external parties affected by the production process through the development of programs, courses and newsletters that help promoting awareness and understanding of the commitment of the departments of companies applying sustainable development companies of Jordanian Chemical Industrial companies.
- 3- Increase the knowledge of accountants in accounting information of public interest for the environment, society and economy, such as treatment of waste associated with the production processes, the basics of its mandate and disposal to ensure the application of sustainable development of Jordanian Chemical Industrial companies efficiently and effectively.
- 4- Jordanian Chemical Industrial companies pay more attention to develop programs for technological development procedures and internal changes on the products to ensure the preservation of natural, physical and social capital for individuals, companies and society.
- 5- Jordanian Companies for Chemical Industries should commit to the Jordanian accounting and environmental laws and regulations related to sustainable development, and international standards and specifications related to the design and production.
- 6- Jordanian Companies for Chemical Industries should pay more attention to provide adequate information and data related to the community, the environment and social welfare requirements in financial reports or inaccuracies and misunderstanding of them.

- 7- Urge Jordanian Companies for Chemical Industries to commit to the laws and regulations related to sustainable development and the basis of their application.
- 8- Hold courses and release leaflets that enhance increasing the knowledge of accountants in accounting information relating to the environment, society and the economy to enrich the internal financial reports and accounting records with a classification for the various environmental costs.
- 9- Develop the capacity of the environment staff and technicians in the government departments concerned with the environment to assess the requirements of the environment and the surrounding community with production of Jordanian Chemical Industrial companies.

11. References:

- 1- A.Ciroth and J. Franze. (2011). LCA of an eco-labeled notebook: Consideration of Social and Environmental Impacts along the Entire Life Cycle. *Berlin. Greendelta*.
- 2- Abdul Aziz Bin Saqr Al-Ghamdi. (2006). Human resource development and the requirements of sustainable development. *Naif University for security Science*. A paper submitted to the Forum. AD / 04/26- Third Arab for Education. Beirut p.23.
- 3- Al-Saffar, Hadi Reda. (2006). Accounting for Sustainable Environment. A research presented to the sixth annual International Scientific Conference entitled. Business Ethics and the knowledge society. *Zaytoonah University, Faculty of Economy and Administrative Sciences*. On April 19 to 17 (April). Amman.
- 4- Alyson Warhurst. (1998). ESRC Global Environmental Change Programme, Developing a Sustainable Economy: Towards a Pro-Active Research Agenda. International Centre for the Environment. *University of Bath*. <http://www.sussex.ac.uk.htm>.
- 5- Amman Stock Exchange (ASE). (2013). Business Directory for 2013. Annual Statistical Bulletin. <http://www.ase.com.jo>.
- 6- AL-Ayeb, Abdel-Rahman. (2011). Control the overall performance of the economic institution in Algeria in light of the challenges of sustainable development. A thesis presented to obtain a Doctorate in Economic Sciences, *University of Ferhat Abbas. Sutf. Algeria*.
- 7- AL-Beshtawi, Suleiman Hussein and AL- Buqami, Mete'b Ayesh. (2014). The reality of accounting for sustainable development in industrial companies; Empirical Study in the Jordanian Industrial Companies. A research discussed at the Fourth Scientific Conference. Entitled: Sustainable development is a need for economic development. *Al-Isra Jordanian University*. In the period (16-17) April. And published in the Journal of Baghdad College for Economic Sciences University.
- 8- Camilla Adelle and Marc Pallemarts. (2009). Sustainable Development Indicators an Overview of relevant Framework Programme funded research and identification of further needs in view of EU and international activities. *European Communities*.
- 9- E. Mazur. (2012). Green Transformation of Small Businesses. Achieving and Going Beyond Environmental Requirements. *OECD Environmental Working Paper No.4. Paris*.
- 10- Environment Canada. (1997). *Introductory Guide to Environmental Accounting*. Ottawa.
- 11- Euro stat. (2001). *Definitions and Guidelines for Measurement and Reporting of Company Environmental Protection Expenses*. Luxembourg.
- 12- European Commission. (2001). *Recommendations on the Recognition, Measurement and Disclosure of Environmental Issues in the Annual Accounts*. EC.
- 13- European Commission. (2003). *Definitions of Characteristics for Structural Business Statistics*. Official Journal of the European Union.
- 14- *Factors affecting the sustainable development in Kuwait*. (2006). a report on outputs of the final phase for the study advisory, Introduction to the planning sector and look to the future, the Ministry of Planning - Kuwait.
- 15- *Handbook of National Accounting*. (2003). Integrated Environmental and Economic Accounting. <http://unstats.un.org/unsd/envAccounting/seea.htm>.
- 16- <http://www.queenrania.jo/ar/community-empowerment/sustainable-development>
- 17- IFAC. (2005). International Guidance Document: Environmental Management Accounting. *IFAC. New York*.
- 18- ILO and OECD. (2012). Sustainable development, green growth and quality employment: Realizing the potential for mutually reinforcing policies. Background paper for the Meeting of G20 Labor and Employment Ministers. *Guadalajara. Mexico. 17-18 May*.
- 19- IMF. (2011). who's going green and why? Trends and determinants of green investment. *IMF Working Paper (Washington. DC)*.
- 20- International Labor Conference. (2013). the sustainable development. Decent work and green careers. Session 102. Fifth report, the fifth item of the agenda, *the International Labor Office. Geneva*.

- 21- Loew T., Fichter K., Mueller U., Shulz W. and Strobel M. (2003). Guide to Corporate Environmental Cost Management. *German Environment Ministry. Berlin.*
- 22- OECD. (2010). *Meeting of the OECD Council at Ministerial Level.* Paris, 27–28 May.
- 23- OECD. (2011). *Interim Report of the Green Growth Strategy: Implementing our commitment for a sustainable future.* OECD: Towards green growth Paris. p. 9.
- 24- Othman Mohamed Ghoneim and Magda Abu Zant. (2008). the problem of sustainable development in the light of the prevailing economic culture. *Derasat Journal*, University of Jordan. Volume 35. Issue 1. Amman.Jordan.
- 25- R. Dobbs et al. (2011). Resource revolution: Meeting the world’s energy. materials, food. and water needs. *New York. McKinsey Global Institute.*
- 26- Shehadeh, Abdul Razzaq Qasim. (2010). Accounting measurement of the costs of the environmental performance of the general Syrian company for fertilizers and its impact on their competitiveness in the field of quality. *Journal of Damascus University for Economic and legal Sciences.* Volume 26. The first edition.
- 27- UNEP and Society of Environmental Toxicology and Chemistry (SETAC). (2009). Guidelines for social life cycle assessment of products. *Brussels.*
- 28- UNEP. (2011). Towards a Green Economy: Pathways to sustainable development and poverty eradication. *Nairobi.* p. 16.
- 29- UNIDO. (2009), (2011). Manila Declaration on Green Industry in Asia; UNIDO Green Industry Initiative for sustainable industrial development: An overview of UNIDO’s Green Industry Initiative; UNIDO Green industry for a low-carbon future: Resource use and resource efficiency in emerging economies – A pilot study on trends over the past 25 years. *UNIDO Green industry: Policies for supporting green industry.*
- 30- United Nations Conference for Environment and Development (UNCED). (1992). Rio de Janeiro, June 3 to 14. *The United Nations Conference on the Human Environment, Stockholm 1972.* <http://ar.wikipedia.org>.
- 31- *United Nations Conference on Sustainable Development: the future we aspire.* (2012). New York. Paragraph. 56.
- 32- United Nations Division for Sustainable Development. (2001). Environmental Management Accounting, Procedures and Principles. *UNDS. New York.*
- 33- United States Environmental Protection Agency. (1995). an Introduction to Environmental Accounting as a Business Management Tool. *USEPA. Washington.*
- 34- *World Bank.* (2012). Inclusive green growth: The pathway to sustainable development. Washington, DC.
- 35- World Commission on Environment and Development. (1987). The Brundtland Definition, Our Common Future. *Oxford University Press.* Geneva. Switzerland. The very best definition.

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