

Influence of the Triple Bottom Line Theory on Sustainability Accounting: Case of Petroleum Sector in Iraq

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Abstract— The purpose of this paper is to define the triple bottom line (TBL) theory and its key indicators, describe the theoretical foundation for sustainability accounting and sustainability reporting, and assess the impact of the TBL theory on sustainability accounting practices in businesses. As a result, the significance of research stems from the significance of sustainability as a major requirement of the modern business environment, as well as the significance of the entities' disclosure of their responsibility to society and the environment, and the effect on enhancing the entities' reputation, supporting their economic activities, and supporting their competitive advantage. The five-year financial statements of four petroleum corporations in Iraq's Kurdistan Region were examined. The researchers discovered a lack of reaction for oil sector plants in Iraq's Kurdistan Region to achieve a competitive advantage by accomplishing social and environmental responsibility for the facilities. The researchers conclude that the TBL theory helps to improve sustainability accounting by quantitatively disclosing the entity's social and environmental actions, and it can serve to raise the degree of awareness for the entity's management in order to meet legislative and stakeholder requirements.

Keywords— Triple Bottom Line Theory, Reports of Sustainability Accounting, Petroleum Sector, Iraq.

I. INTRODUCTION

Successful entities seek to achieve sustainable development in order to ensure their sustainability (Massoudi & Ahmed, 2021). To achieve this goal, the entities should disclose the financial and non-financial results, which are represented by the three dimensions of sustainability (Economic, Social, and Environmental). Therefore, these entities must prepare sustainability reports as well as their traditional reports (financial statements) to meet all the needs of stakeholders. Therefore, the triple bottom line (TBL) theory appeared in order to issue sustainability reports that have the ability to meet the needs of stakeholders, preserve the environment, protect natural resources, and achieve sustainable

development.

Problem of Research:

The increasing global interest towards achieving sustainable development has led entities to disclose their role in achieving sustainability in order to enhance their relationship with stakeholders. Therefore, the financial statements that the entities disclose annually have become insufficient and it was necessary to disclose the entities' responsibility towards society and environment. So, The research problem can be identified through the following question: Can the Triple Bottom Line (TBL) Theory improve sustainability accounting practices in entities?

Objectives of Research:

Research aims to achieve the following:

1. Clarify concept of the TBL theory and its most important indicators
2. Identify the theoretical framework for sustainability accounting, and sustainability reporting.
3. Determine the effect of the TBL theory on sustainability accounting practices in entities.

Importance of Research:

The importance of research stems from the importance of sustainability as a major requirement of the modern business environment and the importance of the entities' disclosure of its responsibility towards society and environment, and its effect on enhancing the entities' reputation, supporting their economic activities, and supporting their competitive advantage.

Hypothesis of Research:

The research is based on a major hypothesis which is "The Employment of TBL theory indicators helps the entity to disclose about its responsibility towards society and the environment, which enhances the practices of sustainability accounting in the entity".

II. LITERATURE REVIEW

Triple Bottom Line (TBL) Theory

Concept of TBL Theory:

The Triple Bottom Line (TBL) Theory can be defined as "a model that includes the traditional baseline for the entity's profit, with additional dimensions of social and environmental

responsibility” (Hill, 2000: 2), (Al-Delawi, 2015: 440). So, TBL concept asserts that an entity’s success should be measured not only by a traditional financial performance but also by social and environmental performance (Naude, 2008: 90). This theory includes additional reports on the performance of entities in the field of sustainability (Thabit et al., 2019: 383). Entities need to include additional information in the reports submitted to improve reporting with stakeholders, as the reported information should be periodically re-evaluated to confirm the expectations contained in the reports and the extent to which they are achieved (Al-Masoudi, 2017: 19).

Elkington (1999) introduced TBL theory for the first time as “An accounting framework that includes three dimensions of sustainable performance” (Elkington, 1999: 54). This framework differs from traditional reporting frameworks, it includes, in addition to the economic performance of the entity, the measurement of environmental and social performance, which is difficult to identify the appropriate means to measure (Slaper and Hall, 2011: 4), (Al-Delawi and Ramo, 2020: 39). Dixon (2014) argues that “TBL is the accounting framework that aims to go beyond traditional profit measures and report corporate performance to include social and environmental measures” (Dixon, 2014: 17), and Alhaddi (2015) defined it as “a structure that expresses the expansion of the environmental agenda by integrating economic and social indicators with environmental indicators (Alhaddi, 2015: 8).

TBL requires a focus on long-term strategic thinking, planning, coordination and implementation. So, when entities seek sustainability, the challenge comes about how to link TBL principles to entity operations (Atu, 2013: 30). Elkington (1999) stated that the TBL theory focuses not only on the added economic value, but on the environmental and social value added as well as TBL is used as a framework for measuring and reporting institutional performance towards economic, social and environmental factors (Elkington, 1999: 61).

The Dimensions of TBL:

TBL contains three dimensions; economic, social, and environmental, and it is also called (3Ps) which refers to profit, planet, and people, as follows (Thabit, 2021: 78), (Atu, 2013: 31), (Alhaddi, 2015: 8):

Economic Dimension: It refers to the impact of the entity’s business practices on the economic system because it relates to the economy’s ability as one of the sustainability systems for survival and development in the future, and aims to support future generations.

Social Dimension: It refers to the adoption of beneficial and fair business practices at work, the idea is that these practices provide value to the community and these practices can include fair wages, health care provision, etc.

Environmental Dimension: It refers to the adoption of practices that do not negatively affect the environmental resources of future generations, because they are related to the efficiency of wealth investment, such as reducing gas

emissions. The environmental agenda has attracted great attention in the last two decades, as it has become an important topic due to the growing awareness towards protecting the earth and its wealth.

The Advantages of TBL:

TBL theory can achieve many advantages as follows (Ekwueme et al., 2013: 80), (Thabit et al., 2019: 2):

Providing a framework for evaluating business performance and corporate success by using sustainability indicators (economy, society and environment).

Provide a practical framework to support the sustainability that entities target in order to achieve the requirements of stakeholders

Contribute to the survival of industries profitable in the future and ensure the rights of future generations of natural resources
Protecting the entity from legal problems and overcoming the pressures of stakeholders

Improving the entity's market share, increasing employee motivation, and giving the entity a competitive advantage

Achieving a positive connection between sustainability reports and institutional performance and enhancing transparency in traditional financial reporting reports.

The Disadvantages of TBL:

Despite the advantages of TBL theory, there are several disadvantages, such as (Thabit and Jasim, 2017: 34), (Slaper and Hall, 2011: 5):

Needs extra time to make and share predictions

An effective TBL report needs to fundamentally restructure the business environment.

The added cost of implementing new procedures and preparing and training employees for new tasks

There is no universally standardized method for calculating the TBL indices, and there is no universally accepted standard for measures comprising each of the three TBL indices.

The TBL Reporting:

The concept of the TBL report refers to the dissemination of economic, environmental and social information in an integrated way that reflects the results of the performance of the entity's activities in these three dimensions (Barut, 2007: 115). The TBL report provides a means to define sustainable development by looking at the effects of activism on the economy, social justice and the environment (Stenzel, 2010: 1). This report is used in accounting to expand the stakeholders' knowledge of everything related to the dimensions of sustainability, as it goes beyond the traditional and financial aspects and reveals the entity's impact on the world around it (Al-Masoudi, 2017: 25). The importance of TBL can be summarized as follows (Willard, 2012: 96):

TBL report helps management to increase revenue and market share of the entity, reduce energy expenditure, reduce waste expenses, reduce material and water expenses, reduce staffing and attrition expenses, and increase the productivity of employees.

TBL report is a social and environmental agreement between society and entities in order to provide information on the entity's impact on matters that affect sustainability.

TBL report includes presenting businesses that are doing well along with areas that need to improve reporting, and this is indicative of the trend towards transparency that can alleviate stakeholders' concerns about hidden information.

TBL report includes making it clear to stakeholders that the business is taking responsibility to a higher level, and this report maintains, develops and improves the entity's expectations.

TBL report helps employees and external stakeholders increase their knowledge of the entity and expand their relationships with other stakeholders. Participation in a learning environment is useful and necessary to work towards achieving sustainability goals.

The Indicators of TBL:

The Indicators of Economic Dimension

This dimension deals with a set of indicators that measure the direct economic effects of the plant operational activities (Chua, 2005: 32):

1. Retained Economic Value (REV):

$REV = \text{Created Economic Value (CEV)} - \text{Distributed economic value (DEV)} \dots\dots [1]$

2. Return on Equity (ROE):

$ROE = \text{net profit (loss)} / \text{Average Equity} \dots\dots [2]$

3. Return on Assets (ROA):

$ROA = \text{Net Profit (Loss)} / \text{average total assets} \dots\dots [3]$

The Indicator of Environmental Dimension

This dimension includes a number of indicators that contribute to preserving the environment and reducing the impact of the harmful activities of the industry (Mentz and Chikanza, 2013: 165):

Raw Materials (RM): Consists of direct material costs, indirect material costs, and packaging material costs.

Efficiency of using RM = $(\text{Direct Material} + \text{Indirect Material} + \text{Packing Material}) / \text{Annual production quantity} \dots\dots [4]$

Consumed Energy (CE): aims to determine the amount of energy consumption used in the manufacturing process, and it measures the plant efficiency in energy consumption.

$CE = \text{Amount of Energy Consumed} / \text{Annual Production Quantity} \dots\dots [5]$

Water Consumption (WC): aims to determine the amount of water consumed in the plant and measures the efficiency of its consumption.

$WC = \text{Amount of water consumed} / \text{Annual Production Quantity} \dots\dots [6]$

Waste Production (WP): aims to determine the percentage of waste production that the plant produces as a result of its operational activities during the year.

$WP = \text{Amount of Waste} / \text{Annual Production Quantity} \dots\dots [7]$

Emissions (ES): aims to measure the amount of harmful gas emissions as a result of plant operational activities during the year.

$ES = \text{Amount of Emissions} / \text{Annual Production Quantity} \dots\dots [8]$

The Indicator of Social Dimension

This dimension aims to measure the plant's contribution to

social welfare, the respect for human rights, the contribution to the local community, and the consumer protection (Al-Masoudi, 2017: 31):

Work Practices (WP): measures the extent of the plant's contribution to the field of social welfare for workers by specifying the advantages and incentives provided to workers to show the relationship between management and workers.

$WP = \text{Social Costs in the Field of Social Welfare for Workers} / \text{Number of Employees} \dots\dots [9]$

Occupational Health and Safety (OHS): measures the extent of the plant's concern for the safety of workers by measuring the safety accidents rate (SAR).

$SAR = \text{Number of accidents during the year} / \text{Actual working hours} \dots\dots [10]$

Training and Education (TE): measures the social responsibility of the plant in qualifying and training its employees.

$TE = \text{Employees Training Costs} / \text{Number of Employees} \dots\dots [11]$

The Sustainability Accounting (SA)

Concept of SA:

Sustainability accounting (SA) is defined as the generation, analysis, and use of critical theory of the environment and socially relevant information in order to improve the environmental, social, and economic performance of entities (Al-Delawi et al., 2023: 87). As the current information that accounting provides to society in its financial statements is no longer sufficient for environmental purposes, but rather requires accountants to focus on the potential economies and other internal management benefits that can be achieved from the development of SA (Thabit et al., 2022: 209). SA describes the subject of accounting that deals with activities, methods and systems resulting from environmental and social causes, the environmental and social effects of the specific economic system and the interactive relationship between social, environmental and economic issues that constitute the three dimensions of sustainability (Vallesi et al., 2012: 48).

SA is also defined as an information system concerned with measuring the social, environmental and economic performance of the entity and the disclosure of the results of this measurement in its reports, which contributes to achieving sustainable development (Thabit and Raewf, 2017: 57). SA can also be defined as an information system concerned with measuring the economic, social and environmental performance of the entity by measuring financial and non-financial results and communicating them to stakeholders and disclosing the manifestations and indicators of sustainable development in all its three dimensions: economic, social and environmental through annual reports aimed at supporting sustainable development (Bent and Richardson, 2003: 8).

The Importance of SA:

The importance of SA stems from the benefits it brings to all stakeholders, as follows (Thabit, 2021: 4), (Thabit et al., 2020: 12), (Vallesi et al., 2012: 51):

SA reports on the economic, social and environmental impacts of the economic unit, which achieves the objectives of the

Global Reporting Initiative (GRI).

SA provides an integrated system for social, environmental and economic disclosures, which contributes to improving the social and environmental performance of entities.

SA provides information on environmental and socially related expenditures and linking them to financial benefits.

SA demonstrates how environmental and social external costs can be reduced over time while adhering to sustainability criteria.

SA Sheds light on the social and environmental risks associated with current financial performance and auxiliary risk management.

The Sustainability Reporting (SR):

Increasing demands from stakeholders are encouraging some entities to include information related to sustainability to obtain more comprehensive information about the operations and financial condition of entities (Ekwueme et al., 2013: 81). The advocates of corporate social responsibility see that transparency and accountability are key elements of a successful sustainability strategy (Massoudi, et al., 2019). Entities have developed and gained wide acceptance with the development of the business environment. They give information on economic, social and environmental performance. Entities issue sustainability reports for the following (WGEA, 2013: 12):

Demonstrate their commitment to the environmental and social issues of workers and the communities they serve.

Enhance the transparency and obtain feedback on their performance in responding to requests for information from an increasing number of stakeholders including investors, clients, and NGOs.

Clarify their efforts to build and maintain relationships with external parties such as the community and other stakeholders

Enhance and protect the entity's reputation.

Promote shareholder growth and brand value.

The Historical Background of SR:

SR was appeared in 1990s, and had gone through many developments until the present time, so the most important of these developments are the following (Al-Masoudi, 2017: 54):

1. The first voluntary environmental reports were published in the late 1980s
2. The first corporate social responsibility (CSR) reports were published in the middle of 1990s.
3. The ISO 14001 standard, which provides requirements for environmental management systems, was published for the first time in 1996.
4. Global organizations that support the sustainability reporting were established in 1997, and TBL theory was emerged.
5. The ISO 26000 standard was published to guide the social responsibility in 2004.
6. The International Integrated Reporting Council (IIRC) initiative was emerged in 2010.

III. METHODOLOGY

Research Population and Sample:

The population of this research covers the petroleum sector in the Kurdistan region of Iraq. So, four oil entities (plants) in Erbil have been selected as a sample for research, and their financial statements for the period (2016-2020) will be analyzed by SPSS. The names of the plants are indicated by letters (A-D) at the request of the plants themselves.

Data Analysis:

The relevant financial data in the financial statements of the research sample plants were analyzed according to three dimensional indicators of TBL theory and as shown in the tables (1-3) below:

- The Economic Dimension:

By applying equations (1-3) to the relevant data available in the financial reports of the research sample plants (A - D) for the period (2016 - 2020), the results mentioned in table (1) were obtained.

Table (1): Results of Economic Dimension

Plant	Year	REV	ROE	ROA
A	2016	1,811,200	0.31	0.090
	2017	1,903,400	0.34	0.093
	2018	1,890,350	0.30	0.091
	2019	2,315,230	0.52	0.112
	2020	2,240,340	0.47	0.108
B	2016	(760,540)	(0.65)	(0.11)
	2017	(416,730)	(0.41)	(0.06)
	2018	(313,110)	(0.35)	(0.04)
	2019	112,410	0.12	0.003
	2020	210,330	0.16	0.007
C	2016	916,250	0.43	0.074

	2017	718,660	0.39	0.072
	2018	910,460	0.42	0.073
	2019	970,550	0.44	0.076
	2020	990,310	0.45	0.078
D	2016	2,110,460	0.26	0.081
	2017	2,640,360	0.31	0.091
	2018	2,590,340	0.30	0.089
	2019	2,230,600	0.28	0.087
	2020	2,350,740	0.29	0.088

According to Table (1), REV, ROE and ROA in general increased for all plants in the period (2016-2020), despite the drop in the global oil price and the outbreak of COVID-19. This means that the plants adopted a number of successful financial policies during this period.

- The Environmental Dimension:
By applying equations (4-8) to the relevant data available in the financial reports of the research sample plants (A - D) for the period (2016 - 2020), the results mentioned in table (2) were obtained.

Table (2): Results of Environmental Dimension

Plant	Year	RM⁵	CE⁴	WC³	WP²	ES¹
A	2016	33.15	0.54	1.23	2.47	210
	2017	30.20	0.54	1.04	2.32	194
	2018	22.50	0.43	1.11	2.35	180
	2019	27.40	0.41	0.96	2.14	150
	2020	20.80	0.28	0.89	2.07	138
B	2016	42.60	0.48	1.25	3.13	238
	2017	40.50	0.46	1.21	3.24	253
	2018	34.15	0.47	1.16	3.02	219
	2019	30.20	0.44	1.12	2.95	186
	2020	28.55	0.35	0.95	2.91	132
C	2016	38.45	0.47	1.32	2.86	186
	2017	35.30	0.50	1.24	2.67	176
	2018	33.35	0.48	1.15	2.61	173
	2019	31.15	0.44	1.04	2.52	164
	2020	27.70	0.35	0.98	2.41	121
D	2016	44.55	0.38	1.32	3.32	241
	2017	37.70	0.35	1.15	3.43	215
	2018	32.50	0.35	1.11	3.11	198
	2019	30.30	0.31	1.04	2.92	184
	2020	26.50	0.21	0.95	2.74	135

According to Table (2), RM, CE, WC, WP and ES in general decreased for all plants in the period (2016-2020). In the years 2016 to 2019, the decline was slow, which means that the environmental awareness level of the plants were increased due to the governmental pressures and the stakeholder needs, but in 2020, this decline was accelerated significantly as a result of the lockdown that occurred due to

Table (3): Results of Social Dimension

Plant	Year	WP ⁸	OHS ⁷	TE ⁶
A	2016	12,650	0.015	130
	2017	12,800	0.012	70
	2018	13,150	0.009	63
	2019	12,400	0.011	71
	2020	9,600	0.005	20
B	2016	16,460	0.009	230
	2017	15,800	0.009	150
	2018	14,780	0.004	120
	2019	14,360	0.007	115
	2020	11,230	0.004	45
C	2016	14,560	0.017	185
	2017	13,400	0.014	172
	2018	12,980	0.012	140
	2019	12,450	0.008	77
	2020	10,850	0.004	37
D	2016	14,210	0.008	167
	2017	14,300	0.011	150
	2018	13,120	0.009	138
	2019	12,650	0.006	112
	2020	9,870	0.003	40

According to Table (3), WP, and TE in general reflected bad results about the social responsibility of the plants through the period (2016-2020). WP decreased in all plants slowly due to the global drop in oil prices in the years 2016 to 2019, but in 2020 WP decreased significantly due to layoffs of employees, or giving them unpaid leave as a result of the outbreak of COVID-19 pandemic. TE also decreased in the years 2016 to 2019, and decreased significantly in the year 2020 for the same reasons.

While there was an improvement in OHS in the years 2016 to 2019 as a result of responding to the governmental pressures and the stakeholder needs, but the significant decrease that occurred in 2020 was due to the global lockdown, and layoffs

the outbreak of COVID-19 pandemic.

- The social Dimension:

By applying equations (9-11) to the relevant data available in the financial reports of the research sample plants (A - D) for the period (2016 - 2020), the results mentioned in table (3) were obtained.
of employees.

IV. COCLUSION

Based on the related accounting literature and the results of the practical part of research, the researchers concluded the following:

1. The TBL theory contributes to enhance SA through the quantitative disclosure of the entity's social and environmental activities.
2. The TBL theory can be helpful to increase the level of awareness for the entity's management to achieve governmental requirements and stakeholder needs.
3. The TBL theory contributes to achieve one of the most important objectives of SA by the disclosure of the entity's commitment to achieve its social and environmental duties.
4. There is a weak response for plants of the oil sector in the Kurdistan Region of Iraq to gain a competitive advantage by achieving social and environmental responsibility for the plants.
5. COVID-19 pandemic was the best test to measure the efficiency of the social responsibility of the oil sector plants in the Kurdistan Region of Iraq, which was shown to be bad and in need of follow-up and monitoring by related organizations.

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