International Journal of Social Science and Economic Research

ISSN: 2455-8834

Volume:04, Issue:02 "February 2019"

SUSTAINABILITY BALANCED SCORECARD: A COMPERHENSIVE TOOL TO MEASURE SUSTAINABILTY PERFORMANCE

Ahmed Fathi Abdelrazek

Assistant Lecturer, Department of Accounting
Damanhur University, Egypt

ABSTRACT

The change in the business environment has become the dominant feature in the current period where the transformations in the markets and the technological developments are increasing and the numbers of competitors are multiplying. Sustainable development has become the main focus of many countries, governments, companies, and nonprofit institutions. Issues related to meeting the needs of society and preserving the environment have become the main goal of many companies rather than maximizing profits only. This study aims to introduce the sustainability balanced scorecard (SBSC) as a comprehensive measurement tool in order to help companies measure the economic, environmental, and social, performance. Using data from a fertilizer manufacturer, this study argues that SBSC is an effective tool which helping translating the sustainability into actions.

Keywords: Balanced Scorecard, Sustainability, SBSC, Case study, Egypt

INTRODUCTION

As the competition increases in different business sectors, the companies have to adopt modern and effective management methods and tools that enable them to gain and retain competitive advantages as long as possible and help them select, apply and evaluate their strategies. The most important of these tools is the Balanced Scorecard (BSC), which has seen great interest from both academics and practitioners. Its implementation in some companies has been very successful, transforming it from a management tool to an integrated strategic management system.

The balanced scorecard balances between the use of financial and nonfinancial measures in order to evaluate short-run and long-run performance. The main objective of BSC is the sustaining on the financial performance in the long run. Nonfinancial measures simply use as leading indicators for the hard-to-measure long-run financial performance. Some companies explicitly

ISSN: 2455-8834

Volume:04, Issue:02 "February 2019"

set long-term economic, social, and environmental goals. Many of these companies believe that meeting social and environmental goals is a key mean to achieve financial goals because good social and environmental performance attracts customers, employees, and investors to the company. Other companies focus on social and environmental goals because they think that they have obligations to multiple stakeholders, not just financial investors (Datar and Rajan, 2018, p. 481).

The shortcomings of incompletely comprehensive tools to the measurement and management of corporate success have led to the increase of economic risks and problems for companies, the economy, and society. As the concepts such as corporate social responsibility (CSR) and company sustainability appear (Lee, 2008; Maon et al., 2010), scholars and practitioners had become more interested in the integrated measurement of economic, social, and environmental performance by company sustainability performance measurement systems. BSC is a multidimensional performance measurement and management tool originally organized hierarchically with four performance perspectives (finance, customers, internal processes and learning and growth) which aimed to balance financial and non-financial, short-term and long-term, as well as qualitative and quantitative measures. The sustainability balanced scorecard (SBSC) goes a step further by explicitly merging relevant environmental and social goals with economic ones (Hansen and Schaltegger, 2016).

The Balanced Scorecard has emerged in many studies as a performance management system that takes into account sustainability aspects. Most companies face significant difficulties in addressing environmental and social issues because of their culture based on financial aspects only. However, adapting BSC to environmental and social perspectives helps facilitate cultural change towards sustainability. The use of the BSC has helped measure the impact of environmental and social initiatives on financial performance (Lansiluoto and Jarvenpaa, 2010). Dias-Sardinha et al. (2007) showed that SBSC should be created gradually to give companies time to adapt their internal structures and to create acceptance for the company's employees. After presenting SBSC, companies must adopt a range of other control systems that fit with this tool. The application of SBSC alone does not guarantee that the environmental and social issues have a lot of attention by senior management.

Many studies interested in incorporate the environmental, social, and economic dimension in a comprehensive performance measurement system. In particular, previous studies have adopted SBSC as an important tool for integrating the environmental and social dimensions into performance measurement process (Schaltegger and Freund, 2011; Hansen and Schaltegger, 2016; Aly and Mansour, 2017; Datar and Rajan, 2018). The previous studies of the SBSC shows

ISSN: 2455-8834

Volume:04, Issue:02 "February 2019"

that there are two main approaches to include the environmental and social dimensions within the balanced scorecard:

1- Include environmental and social objectives within the four perspectives of the balanced scorecard: Environmental and social indicators are merged with the four perspectives of the balanced scorecard. The SBSC includes the most important environmental and social indicators for companies where each company focusing on environmental and social issues that are seen as valuable and conducive to long-term success.

2- Add a special perspective to environmental and social issues to the four basic perspectives of the Balanced Scorecard. This perspective focuses on environmental and social issues only and is linked to cause-and-effect relations with other perspectives. Companies tend to make this proposal when they have many environmental and social issues.

Companies incorporate environmental and social objectives within the four perspectives of BSC when they are in their initial stages of adopting sustainability. The company selects the most important sustainability considerations for its business that it can successfully implement, and then inserts them into the perspectives of BSC. As the sustainability of the company increases and becomes a key component that ensures the success of the company, it adds a separate perspective to the environmental and social standards and connects this perspective to other perspectives of BSC through cause-and-effect relationships.

The present study focuses on including the environmental and social aspects in a comprehensive measurement system specifically in the balanced scorecard. To examine this issue, this study uses data collected from a fertilizer manufacturer. This study introduces the environmental and social measures as a part of SBSC beside the four original perspectives of BSC.

This study contributes in the literature to develop a traditional BSC to include the environmental and social objectives in the companies that are interested in introducing a green product (i.e. environmentally friendly product) which can be recycled. Therefore, the present study contributes to theory and practice by presenting an advanced theoretical model for sustainability performance measurement which is one form of SBSC that it contains six perspectives (finance, customers, internal processes, learning, and growth, environmental, and social). Then, using the proposed model in measuring the sustainability of a fertilizer company.

The remaining of this paper will be organized as follows: Section 2 presents the concept of the sustainability balanced scorecard. Section 3 includes a research method which conducts a case

ISSN: 2455-8834

Volume:04, Issue:02 "February 2019"

study and presents the performance measurement results. Section 4 discusses the results and shows future opportunities for research.

SUSTAINABILITY BALANCED SCORECARD

Sustainable performance measurement systems are used to set objectives that executed and to what extent. As long as the environmental and social performance objectives become part of the management control systems of a company, it can effectively measure the sustainability performance. However, traditional performance measures can't be used to the evaluation of overall performance and are often focused only on financial performance. These traditional systems are neither comprehensive nor effective for holistic performance evaluate (Wu and Hung, 2008; lu et al., 2018).

As many environmental and social issues are non-financial and often influence a company particularly over the long run, BSC is considered an appropriate tool to measure sustainability performance. The SBSC differs from the BSC in its architecture by explicitly recognizing environmental and social objectives and performance measures. Figge et al. (2002) have emphasized the potential of the SBSC for merging business strategy management with sustainability strategy management for two reasons: first, it allows management to address goals in all three aspects of sustainability by integrating economic, environmental, and social issues, whereas other approaches merely focus on one sustainability aspect. Second, the SBSC merges these three aspects in a single integrated performance management system instead of requiring parallel systems (e.g. separate financial, social, and environmental performance management systems). Based on these considerations, researchers have developed SBSC designs (e.g. Figge et al., 2002; Hansen and Schaltegger, 2012; 2016; Kang et al., 2015; Lu et al., 2018).

There are many shortcomings related to traditional BSC. One of those shortcomings is that BSC only recognizes three market stakeholders: shareholders (financial perspective), customers (customer perspective) and employees (Internal Business Process and Learning and Growth perspective), and ignores two significant non-market stakeholders: environmental and social issues, which are related to sustainability. Sustainability is a complex term defined as the active and voluntary contribution of a company to environmental, social, and economic improvement. Figge et al. (2002) suggest the addition of non-market perspective into BSC in order to strategically integrate environmental and social aspects into a firm’s business strategies. That study presents a model to incorporate sustainability into business performance evaluation. The SBSC not only help detect strategic environmental and social aspects but also enhance the implementation process of strategy. However, Figge et al. (2002) only proposed theoretical hypotheses without empirical support (Kang et al., 2015).

ISSN: 2455-8834

Volume:04, Issue:02 "February 2019"

The SBSC is defined by Figge et al. (2002) as overcoming the shortcoming of the traditional BSC by incorporate environmental and social aspects in it. The BSC approach formulates a hierarchical system of strategic goals from four main perspectives: financial, internal business process, customers, and learning and growth. The comprehensive evaluation model of BSC integrates financial and nonfinancial measures to construct a relation among different perspectives. However, social and environmental perspectives have been ignored. Hence, the SBSC arrangement has been recommended to evaluate the performance of companies after including measures related to sustainability. The SBSC is designed to detect the strategic social and environmental objectives of a company and to improve the potential value-added from environmental and social perspectives. Some researchers have described the SBSC as an essential management strategy or tool to increase the consciousness of company responsibility (Tsalis et al., 2013). Others have used the SBSC to outline efficient strategies in which social, environmental, and economic perspectives are amalgamated into a combined structure for sustainability performance evaluation (Radu, 2012; Lu et al., 2018).

Wati and koo, (2011, p. 2) present a definition of Green IT BSC as "a nomological management tool to systematically align IT strategy with business strategy from environmental sustainability perspective in order to achieve competitive advantage". The objectives of the Green IT BSC are: (1) measuring technology performance by effectively integrating environmental considerations with IT BSC, (2) investigating both tangible and intangible assets of Green IT investment, and (3) aligning IT performance and business performance, and transforming the results into competitive advantage. A proposed Green IT Balanced-Scorecard is presented in figure 1.

The SBSC can be studied with regard to their design, implementation, use, and evolution (Searcy, 2012). Hansen and Schaltegger (2016) focus on their design by analyzing the SBSC architecture composed of strategic objectives, performance perspectives and the hierarchy represented by cause-and-effect chains between these elements. A Strategy map is presented in figure 2.

Schaltegger and Freund (2011) use a case study of the Hamburg Airport and they found four approaches to integrate the social and environmental aspects into the Balanced Scorecard:

1- Integrating the environmental and social measures into the four key perspectives of BSC.

2- Add more perspectives to the standard BSC architecture in order to address sustainability issues.

3- Change the original hierarchy and replace the financial perspectives with the sustainability one.

ISSN: 2455-8834

Volume:04, Issue:02 "February 2019"

4- Add more perspectives in order to guide the financial perspective at the top of the design of BSC.

It should be noted that previous studies dealt with the framework of the SBSC from a theoretical view and did not address its practical implementation. Unlike previous studies, Schaltegger and Freund (2011) measured the sustainability performance and prepared sustainability reports of Hamburg Airport in Germany. The case of Hamburg Airport includes many different interactions between business and the natural environment and society. Dealing with these interactions is the purpose of managing and measuring sustainability performance. In this regard, three levels are distinguished: individual sustainability performance indicators, overall performance measurement system, and system relations with the external environment.

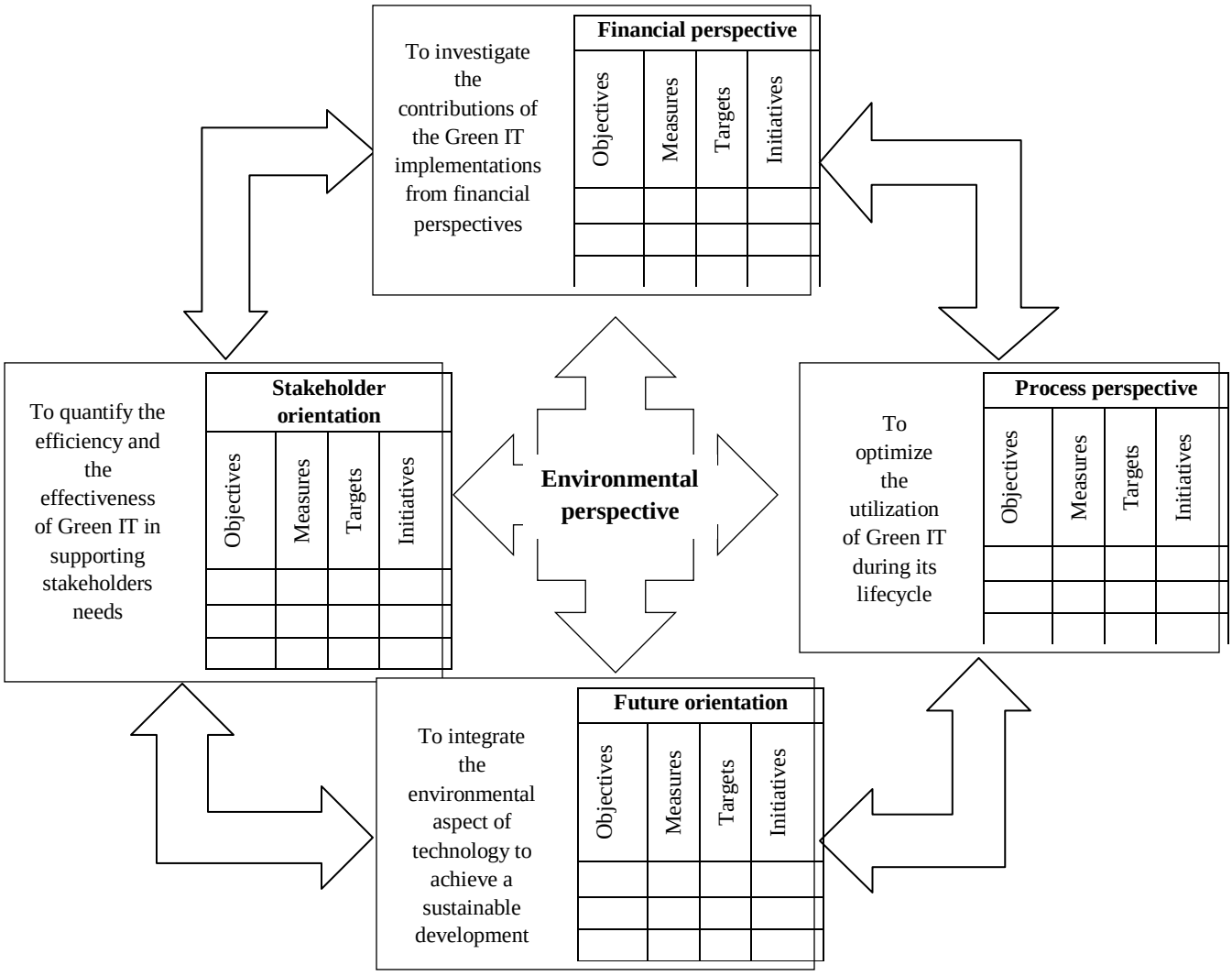

Figure 1: Green IT Balanced Scorecard

ISSN: 2455-8834

Volume:04, Issue:02 "February 2019"

Source: Watti and Koo, 2011, p. 5.

Schaltegger and Freund (2011) presented a performance measurement framework based on the SBSC, sustainability accounting, and sustainability reports. This framework assumes that: By providing information to strategic management and reporting purposes, sustainability accounting is an important link between the SBSC and sustainability reporting. Information is derived from the SBSC and is collected and analyzed by sustainability accounting and then communicated externally through sustainability reporting.

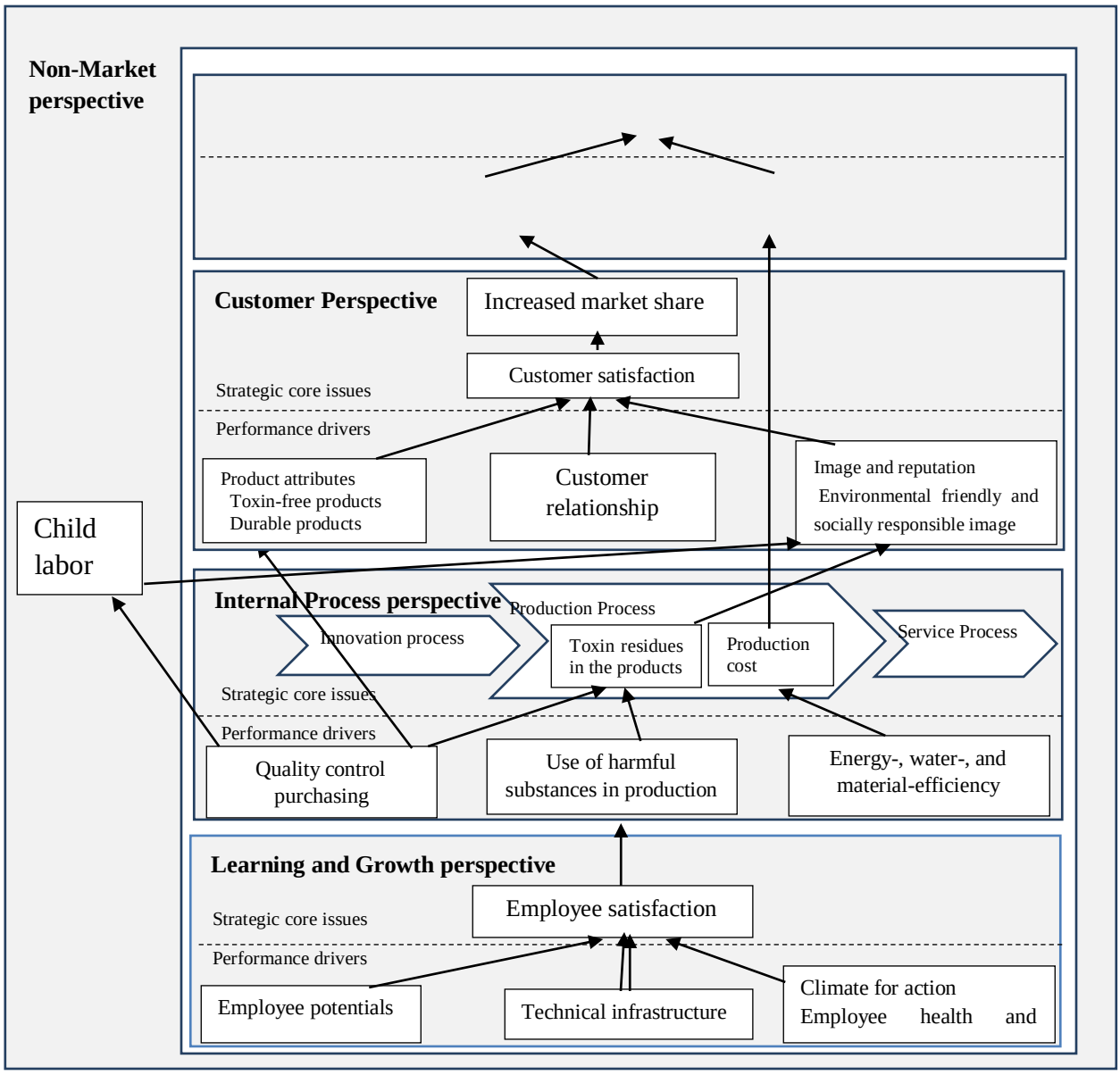

Figure 2: Strategy map of the SBSC

ISSN: 2455-8834

Volume:04, Issue:02 "February 2019"

Source: Hansen and Schaltegger, 2016, p. 197

The using of the SBSC helps the companies to implement and evaluate sustainability strategies. It has imposed itself as one of the most important tools that can be used to measure sustainability performance because it contains both financial and non-financial measures. In addition, cause-and-effect relationships between environmental and social measures and other measures can help to interpret and evaluate the impact of environmental and social initiatives on the four perspectives of the Balanced Scorecard, particularly on the financial performance of the Company.

This study designed some form of SBSC which contains six perspectives: Financial, customer, internal process, Learning and growth, environmental, and social perspective. Figure 3 explains the proposed model of SBSC. Each perspective of SBSC contains many indicators that can be used to measure the performance of that perspective. The sum of these indicators outcomes measures the overall performance of a perspective. Consequently, the performance of all six perspectives equals the sustainability performance of a company. The problem arises when the accountant measures the nonfinancial indicators, therefore this study suggests using weighted measures for all perspectives. In this regard, each perspective will have own weight and each indicator will also have own weight. The sum of weights of all indicators inside a perspective equals the weight of that perspective. The sum of weights of all perspectives equals the sustainability performance of a company. Each company has its own circumstances so it must choose the appropriate indicators that achieve its objectives.

ISSN: 2455-8834

Volume:04, Issue:02 "February 2019"

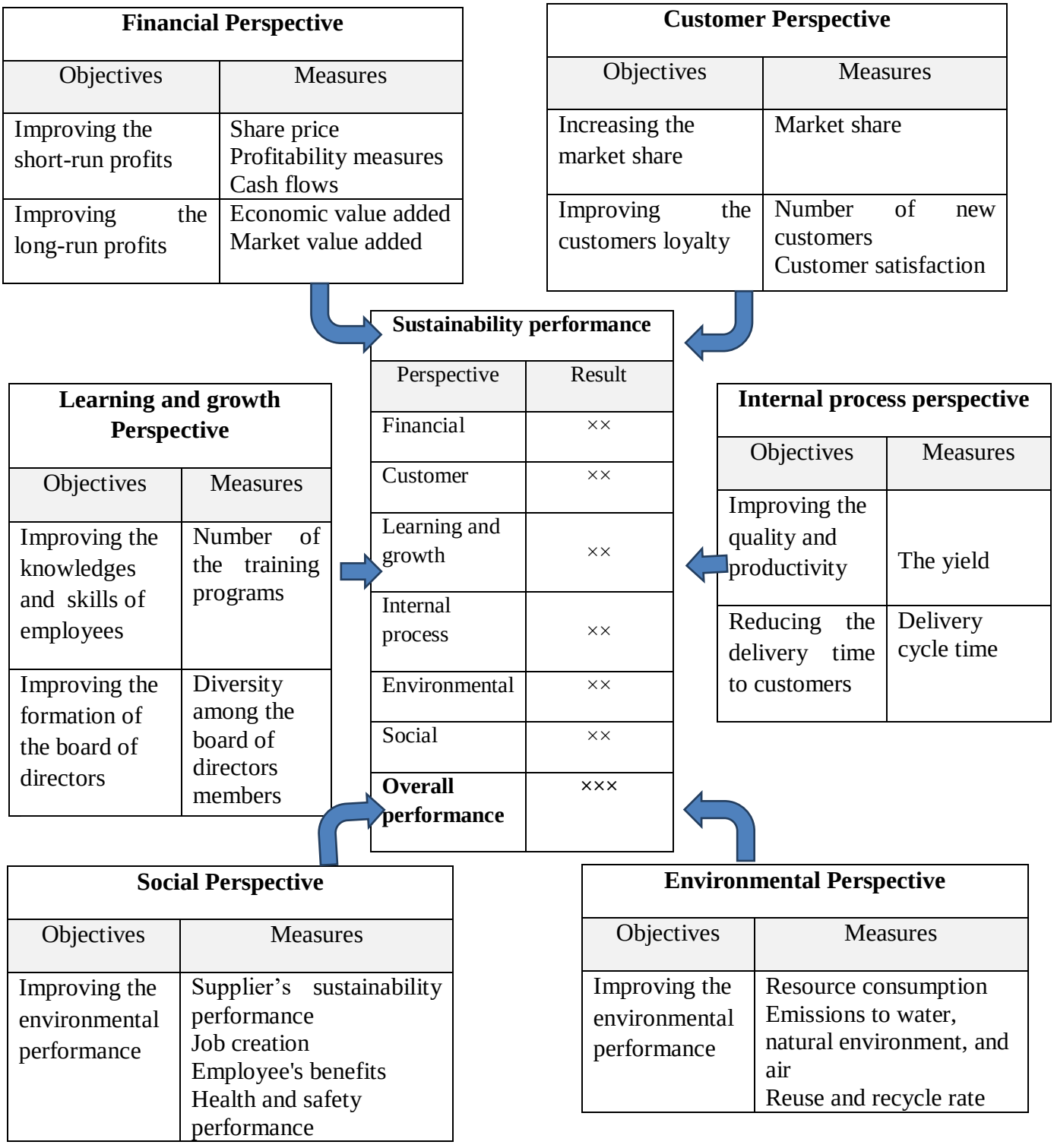

Figure 3: Sustainability Balanced Scorecard containing six perspectives

ISSN: 2455-8834

Volume:04, Issue:02 "February 2019"

REASERCH METHOD

The methodology of the case study can investigate a contemporary phenomenon within its real-life context, and provide multiple data sources [Yin, 1994]. The provided data have an emphasis on depth and quality, rather than population size [Eisenhardt, 1989]. Thus, this study conducts a case study to investigate the possibility of implementing the SBSC in the Egyptian context. Data are collected using multiple sources. Internal reports of health and safety, annual reports, and the company website.

The case study is performed of an Egyptian manufacturing company of Fertilizers. It is specialized in manufacturing all kinds of nitrogen fertilizers, its production covers more than 70% of the local market requirements. The company is concerned with protecting the environment and its employees from the pollutants produced by its production operations. The company pays great attention to the surrounding society. As the company pays attention to the environment and surrounding society, the company is expanding to provide new high-quality products that enable the company to compete in various markets and enhance its economic value.

Table 1 presents the results of the performance measurement using SBSC tool. This tool contains to seven columns:

1- The first column includes the six perspectives of SBSC which are financial, customer, internal processes, learning and growth, environmental, and social perspective. Each perspective contains a set of objectives.
2- The second column includes the performance measures of each perspective.
3- The third column contains the proportional weight of each perspective (e.g. the proportional weight of financial perspective is 30%) and each performance measure (e.g. the proportional weight of sales growth is 30%). These proportional weights are determined based on many factors such as the company position in the market, the ownership structure, the organizational framework, the knowledge level of the community, and so on.
4- The fourth column include the actual performance of the company.
5- The fifth column contains the standard performance which expresses on the average performance of the fertilizer industry in Egypt and the standard level of some measurements such as the energy consumption and the emissions to water and air.
6- The six-column contains the performance level where the actual performance will be compared to the standard performance. therefor we face three cases: the first one the actual performance exceeds the standard performance so the performance level will be excellent, the second case the standard performance exceeds the actual performance so the performance level will be weak, and the third case the two performances are equal so the performance

ISSN: 2455-8834

Volume:04, Issue:02 "February 2019"

level will be good or at the same level as the other counterparts. These three levels have three grades which are

Table 1: Sustainability Balanced Scorecard in a fertilizer company working in Egypt

Perspectives / Objectives	Performance measures	The weight	Actual performance	Standard performance	Performance level	Result
Financial		**30%**				
Growth	Sales growth	30%	24.8%	15%	90	8.1
	Production volume growth	30%	20%	10%	90	8.1
	Net profits growth	12%	8%	10%	60	2.16
	Return on equity	16%	50%	20%	90	4.32
Profitability	Earnings per share	12%	1.61	12	30	1.08
Customer		**15%**				
Market share	The company market share	30%	75%	30%	90	4.05
Response time	Delivery cycle time	15%	13 day	14 day	60	1.35
New products	New products sales / total sales	20%	25%	10%	90	2.7
Customer satisfaction	Customer satisfaction surveys	5%	---	High	30	0.225
	Customer Retention Rate	5%	75%	75%	60	0.45
Product quality	Product performance in relation to quality standard	25%	90%	60%	90	3.375
Internal processes		**15%**				
Quality	Delivery in time rate	10%	95%	85%	90	1.35
	Valid production units ratio	10%	98%	97%	60	0.9
	Number of defect units -10000	10%	20 units	25 units	90	1.35
Cost reduction	Products cost compared with counterparts	20%	80%	78%	60	1.8
Inventory reduction	Inventory / sales ratio	10%	10%	10%	60	0.9
Runtime	Manufacturing cycle efficiency	10%	75%	76%	60	0.9
New products	Number of new products	15%	3 products	6 products	30	0.675
New effective components	Number of new effective components	15%	**10 components**	**10 components**	60	1.35
Learning and growth		**13%**				
Employees retention	Employees turnover rate	30%	9%	12%	30	1.17
Employees capabilities	The ratio of the employees participating in the training programs	30%	85%	45%	90	3.51
Employee productivity	Number of the units produced by one employee	40%	1300 units	1000 units	90	4.68
Environmental		**20%**				
Environmental performance	Energy consumption	20%	150 m Therm	120m Therm	30	1.2
	Resource consumption-					

ISSN: 2455-8834

Volume:04, Issue:02 "February 2019"

	formaldehyde	20%	2000 tons	--	60	2.4
	Emissions to water					
	Ammonium-Microgram/liter	7%	11	3	30	0.42
	Nitrogen- Microgram / liter	7%	39	40	60	0.84
	Nitrate- Microgram / liter	6%	200	100	30	0.36
Eco-efficiency	Emissions to air					
	Ammonium	10%	0.71	25	90	1.8
	NOXs	10%	0.08	3	90	1.8
	Recycle rate	15%	70%	30%	90	2.7
	Number of products for recycling and decomposition	5%	10	5	90	0.9
Social		**7%**				
Community	Number of Jobs Chances	10%	50	--	90	0.63
	Size of disclosure on sustainability	5%	Weak	--	30	0.105
	Number of violations	10%	2	--	90	0.63
Health and safety	Health and safety performance	35%	Excellent	--	90	2.205
Society acceptance	Compliance to regulations	35%	Excellent	--	90	2.205
Sustainability cultures	Sustainability audit and communication	5%	Weak	--	30	0.105
The overall sustainability performance						**72.8**

90, 60, and 30 whereas excellent level takes 90, good level takes 60, and weak level takes 30.

7- The seventh column contains the results of the performance measurement. These results be added to each other to count the sustainability performance. The result of any measure equal the proportional weight of that measure multiply the proportional weight of its perspective multiply its performance level. For example, the result of sales growth = 30% * 30% * 90 = 8.1, the result of energy consumption = 20% * 20% * 30 = 1.2, and so on. The sum of all results give us the overall sustainability performance. The sustainability performance of the fertilizer company is 72.8 which means that is more than good.

DISCUSSION

The company uses a large number of sustainability performance measures including the intensity use of energy, water, land, and raw materials, the rate of harmful emissions, health and safety measures, the average days of training per employee, the number of violations against the company, The rate of increase in the use of renewable energy, the percentage of environmentally friendly manufactural processes, investment in personnel training, the company's market characteristics, the retention rate of employees, the retention rate and acquisition of new customers, as well as financial measures, such as sales growth rate, the ratio of debt to equity,

ISSN: 2455-8834

Volume:04, Issue:02 "February 2019"

and the proportion of profit margin, and others. Although these measures exist within the company, there is no formal mechanism that combines them into one specific framework and also does not use these measures regularly but only when needed.

The company gives great attention to the financial perspective as it represents 30% of the sustainability performance where the company seeks to continually increase its sales and profits. It followed by the environmental perspective that the company gives great importance as it represents 20% of the sustainability performance due to the company's concern for the safety of its employees, its desire to avoid fines resulting from high levels of pollution, and its efforts to provide environmentally friendly products that enable it to open up foreign markets, especially in the European Union, where exports of fertilizers produced by the company represent 61% of the total revenues of the company. After that, the customer perspective comes which represents 15% of the sustainability performance, where the company is interested in increasing the volume of production only without looking at sales, where there is a large gap, in the fertilizer market in Egypt, between the demand and supply. At the same importance, the internal processes perspective comes where The company is interested in continuously improving its operations to minimize pollution levels and provide high quality products. Then, the learning and growth perspective as it represents 13% of the sustainability performance where the company cares about employees and maintain their health and training well to raise the productivity of its employees. Finally, the social perspective is represented by 7% of the sustainability performance where The company is committed to the government's obligations, and therefore the social contributions made by the company are mostly mandatory.

The SBSC presents a comprehensive tool to measure all aspects of sustainability. This tool presents a holistic view of all sectors inside the company. Using SBSC motives the managers to address all issues that influence the performance of the company including the financial and nonfinancial issues. Therefor, SBSC helps improving the financial and nonfinancial performance including the environmental and social performance. The cause and effect relationships explain the impact of nonfinancial considerations on the financial ones.

Further studies must be conducted in order to demonstrate the benefits that companies gain as a result of adopting environmental and social initiatives, and explain the impact of improvement in environmental and social performance on the company's financial performance and on the company's image and reputation.

REFERENCES

Aly, A. H., & Mansour, M. E. (2017). Evaluating the sustainable performance of corporate boards: the balanced scorecard approach. *Managerial Auditing Journal*, *32*(2), 167-195.

ISSN: 2455-8834

Volume:04, Issue:02 "February 2019"

Datar, S. & Rajan, M. (2018). *Horngren's cost accounting: A managerial emphasis*. Sixteenth edition, Hoboken, New York: Pearson.

Dias-Sardinha, I., Reijnders, L., & Antunes, P. (2007). Developing sustainability balanced scorecards for environmental services: A study of three large Portuguese companies. *Environmental Quality Management*, *16*(4), 13-34.

Eisenhardt, K. M. (1989). Building theories from case study research. *Academy of management review*, *14*(4), 532-550.

Figge, F., Hahn, T., Schaltegger, S., & Wagner, M. (2002). The sustainability balanced scorecard–linking sustainability management to business strategy. *Business strategy and the Environment*, *11*(5), 269-284.

Hansen, E., & Schaltegger, S. (2012). Pursuing Sustainability with the Balanced Scorecard: Between Shareholder Value and Multiple Goal Optimisation. working paper. Lu¨neburg, Germany: centre for sustainability management (CSM), Leuphana University of Lu¨neburg.

Hansen, E. G., & Schaltegger, S. (2016). The sustainability balanced scorecard: A systematic review of architectures. *Journal of Business Ethics*, *133*(2), 193-221.

Kang, J. S., Chiang, C. F., Huangthanapan, K., & Downing, S. (2015). Corporate social responsibility and sustainability balanced scorecard: The case study of family-owned hotels. *International Journal of Hospitality Management*, *48*, 124-134.

Länsiluoto, A., & Järvenpää, M. (2010). Greening the balanced scorecard. *Business Horizons*, *53*(4), 385-395.

Lee, M.-D. P. (2008). A review of theories of corporate social responsibility: Its evolutionary path and the road ahead. *International Journal of Management Reviews*, 10(1), 53–73.

Lu, M. T., Hsu, C. C., Liou, J. J., & Lo, H. W. (2018). A hybrid MCDM and sustainability-balanced scorecard model to establish sustainable performance evaluation for international airports. *Journal of Air Transport Management*, *71*, 9-19.

Maon, F., Lindgreen, A., & Swaen, V. (2010). Organizational stages and cultural phases: A critical review and a consolidative model of corporate social responsibility development. *International Journal of Management Reviews*, 12(1), 20–38.

ISSN: 2455-8834

Volume:04, Issue:02 "February 2019"

Radu, M. (2012). Empirical study on the indicators of sustainable performance–the sustainability balanced scorecard, effect of strategic organizational change. *Amfiteatru Economic Journal*, *14*(32), 451-469.

Schaltegger, S., & Lüdeke-Freund, F. (2011). The sustainability balanced scorecard: Concept and the case of Hamburg airport.

Searcy, C. (2012). Corporate sustainability performance measurement systems: A review and research agenda. *Journal of business ethics*, *107*(3), 239-253.

Tsalis, T. A., Nikolaou, I. E., Grigoroudis, E., & Tsagarakis, K. P. (2013). A framework development to evaluate the needs of SMEs in order to adopt a sustainability-balanced scorecard. *Journal of Integrative Environmental Sciences*, *10*(3-4), 179-197.

Wati, Y., & Koo, C. (2011). An Introduction to the Green IT balanced scorecard as a strategic IT management system. In *Green Finance and Sustainability: Environmentally-Aware Business Models and Technologies* (pp. 126-152). IGI Global.

Wu, S. I., & Hung, J. M. (2008). A performance evaluation model of CRM on non-profit organisations. *Total Quality Management*, *19*(4), 321-342.

Yin, R. (1994). Case Study Research: Design and Methods. Second Edition. Sage, London.

