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Sustainability assessment tools. A review of two selected indexes based on performance evolution of ranked firms

Maura La Torre *

Department of Management and Business Administration
University “G. d’Annunzio” of Chieti-Pescara
E-mail: mauralatorre@yahoo.it

** Corresponding author*

Abstract

This paper seeks to contribute to the literature on sustainability assessment tools, proposing a different perspective in reviewing firms’ sustainability indexes, based on observation of performance variations of ranked firms, during a determinate time period. This analysis adopts an interpretive approach in reviewing variations in economic, environmental and social performance of companies listed in selected sustainability indices, during a determinate time period. Results obtained from this review allows to test the effectiveness of disclosure capability of firms’ sustainability rankings perspective, as applied in observations of listed company’s performance variations, during the period covered by the analysis. Despite this paper only considers firms’ sustainability indicators, it may involve interesting implications for managers seeking firm’s inclusion of their company in indexes as those chosen for this analysis. The review carried out using companies already ranked, provides useful information about profile of performance of these businesses and as such performance has varied over time. With reference to suggestions for future researches, one could consider that, albeit the analysis in this paper proposed is referred to firms’ sustainability indices, it could be extended also to other types of indexes or indicators providing rankings constitution and publication.

Keywords – Sustainability Assessment tools; indicators; firm’s sustainability rankings; review.

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1 Introduction

Characterized by articulated composition methodologies, by complex techniques of data processing and stressed by the pressure to help make sustainability assessment process as efficient as possible, indicators and indices seem to be directed only to experts, although already part also of our daily life (Hák, Moldan, & Dahl, 2012). Indicators should represent the right balance between scientific precision and synthesis of data, keeping the promise to correctly identify the object of observation, and then guide recipients for acting appropriately compared to what detected (Kuik, & Verbruggen, 2012). In the sustainability field, indicators represent a widespread assessment tool, although they having to move between criticisms made to the inevitable reductionism intrinsic in their quantitative nature, and the need to allow sustainability to become a paradigm, raising, in this way, one of the most crucial issues in sustainability debate, i.e. if it is really possible that simple indexes are able to synthesize complex phenomena such as those related to sustainability (Bell, & Morse, 2008). Nevertheless, nowadays indicators are certainly recognized as belonging to the sustainability assessment toolbox. Consequently, many typologies of sustainability indicators have been developed, many other will be developed in the future to respond to increasingly urgent needs to improve efficiency of sustainability assessment process. In this context of general complexity, and given objective difficulties to be oriented among multitude of indicators, is desirable that attention of scientific community and professionals remains constantly high, proposing works that should lead support in understanding of as many as possible aspects concerning indicators, such as interest areas covered, methodologies underlying their composition, or examples of their practical applications with case studies of good practice and failures, thus always providing new insights for both researchers - looking for different perspectives of analysis - both for professionals - applying these sustainability assessment tools to increase their standards of quality and effectiveness.

This paper attempts to contribute to these purposes, reviewing a particular typology of sustainability indices, namely firms' sustainability indexes. Several researches proposing this type of analysis already exist. Summarizing by some of them, sustainability assessment tools - including indicators and indexes - can be categorized according to their descriptive or predictive nature, or respect to interest areas on which they are addressed, or even compared to their ability in merging environmental, social and economic aspect (Ness, Urbel-Piirsalu, Anderberg, & Olsson, 2007); or also considering how they were built on the basis of normalization, aggregation and weighting (Singh, Murty, Gupta, & Dikshit, 2009); or even respect to useful aspects in establish whether two or more assessment tools can be combined with each other or competing if too similar respect to data quality, timing and impacts (Finnverden, 2000). In other studies, the overview is limited to a single category of assessment tools, as in Sharifi and

Murayama (2013), in which authors point out strengths and weaknesses of some Neighborhood Sustainability Assessment (NSA) tools; or in Haapio and Viitaniemi (2008), in which environmental assessment tools referred to the building sector are reviewed, highlighting in particular their connection with the life cycle; or even in the contribution of Mori and Christodoulou (2012), in which indices and indicators review become preparatory to explore characteristics of a new City Sustainability Index (CSI).

According to these researches, we review two selected firms' sustainability indexes, Dow Jones Sustainability World Index (DJSI), developed by Robeco Sustainable Asset Management (RobecoSAM), and Corporate Knights Global 100 Index. In this review, perspective of evolution of performance of firms included in rankings yearly provided by chosen indices, is adopted. Review is performed observing variations, during a ten year period (2005-2014), of several economic, environmental and social firm performance variables selected basing on an interpretation of the Triple Bottom Line Sustainability Framework (Elkington, 2004), as well as revised by Savits and Weber (2007; 2014). We argue that this typology of review may contribute to research strand engaged in enhancing knowledge on sustainability assessment tools by offering a different analysis perspective, in addition to many others addressed in studies that over time have contributed to define, characterize, classify and organize the various types of indicators used - pursuing different objectives at different levels - for sustainability objectives. In particular, we point out that information gained observing time evolution performance of ranked firms could be useful respect to the following three grounds:

- from a scientific point, an overview of how over time have evolved certain aspects of performance of the companies listed in sustainability indexes, could help scholars to find more ideas for future researches;
- the review of firms' sustainability indexes based on the evolution of performance of companies ranked in their constituent lists could support stakeholders to make considerations about whether ranked companies, during time, maintain, or not, certain levels of financial, environmental and social performance;
- from a practical point of view, management of companies striving to inclusion - or avoiding the exclusion - to and from sustainability indexes, may use the review based on evolution of performance of companies ranked in their constituent lists, to identify strengths and weakness in their organization, and eventually adopt appropriate corrective measures.

Respect to the considerations made so far, the remainder of this paper is organized as follows. In section two, a review of selected literature is provided. Methodological approach and applied methods are in section three while, in the fourth, results are presented and discussed. Paper ends with fifth section, summarizing main findings and drawing final conclusions of the research.

2 Literature review

What is sustainable development? The search for answer to this question lies in a plethora of scientific and practical contributions, which, over time, shaped its evolutionary history. In most of these works, the birthplace of sustainable development is considered to be the World Commission on Environment and Development (WECD) in 1987, when Gro Harlem Brundtland formulated what later became one of the most widely used and cited - but at the same time vague and ambiguous - definition of sustainable development (SD) as “development that meets the needs of the present without compromising the ability of future generations to meet their own needs” (Brundtland, 1987). Despite this definition has been and continues to be a milestone and, for decades, starting point of many researches on this issue, the historical evolution of the SD seems to be rooted in times prior to the Our Common Future report. Mebratu (1998) identifies historical and conceptual precursor of sustainable development dividing its evolution over the years into three main stages: the pre-Stockholm period, until the conference on Environment Development in 1972; the period from the Stockholm conference and WECD, between 1972 and 1987; and the post-WCED period. He argues that many existing interpretations of sustainable development sometimes lose sight of the main goal to capture the essence of the full concept, and this due to influence exerted by organizations and groups, thus making often flawed the resulting definitions. In Balbinot (2012), is highlighted as critics associated with difficulties in categorizing complex styles of reasoning as those ontological, epistemological, conceptual and paradigmatic should not be an obstacle for the characterization of sustainable development as quasi-object of study for management, using differences between these studies as an asset and not as an impediment to the full knowledge of the topic. Robinson (2004) compares the critical issues inherent in the understanding and definition of the concept of sustainable development even to the ancient philosophical dilemma “square the circle”, focusing its analysis within the context of industrialized countries; while in Redclift (2005), sustainable development sounds like an oxymoron if it is contextualized in a reality where, additionally to global environmental justice is also important to consider social consequences of an environment different respect to how it was at the time of SD at its beginnings.

Always trying to improve the lasting and ongoing debate on sustainable development, many scholars try to help reduce the level of general confusion around this concept, due to the existence of too many different and sometimes contradictory of its interpretations and definitions. Examples are those studies trying to contribute in this sense mapping methods based on a combination of environmental and socio-economics issues (Hopwood, Mellor, & O'Brien, 2005); or researches investigating SD concept from the perspective of its being central issue in two fundamental texts as the World Conservation Strategy (1980), and Our Common Futures (1987); and in relation to its position respect to cyclical and progressive philosophies, extension development or alteration of development, or still in relation to the fact that SD is often used synonymously with common good, with the belief that it is an ambiguous concept exactly because of its being in the middle between the pro-growth position of developmentalists and that the no-growth environmentalists (Mitcham, 1995). Giddins et al. (2002) discuss about the fact that sustainable development is almost always associated with the merge of environment, society and economy, which instead, although in relation to each other, are quite distinct elements. They argue that only an integrated and principles-based vision of world and human life could lead toward the idea of a long-term sustainable development. And in still other studies, the problem of the ingrained imperfection in human being - as possible impediment to sustainable development implementation - is faced (Morse, 2008); or changes in behaviours of individuals, organizations and institutions are identified as prerequisites for sustainable development (Dobson, 2007); or is the rhetoric, sometimes underlying the concept of SD, to be considered due to abuse of this term with reference to situations that have almost no matching neither with development nor with sustainability (Luke, 2005).

We could continue for long, many other contributions could be cited but, even from this brief review of selected literature, problems in finding clear, comprehensive and universally acceptable meaning and definition of sustainable development are decidedly highlighted, despite the generous scientific production covering this topic. And what about dealing with sustainable development assessment? Also regarding to sustainability development assessment, many are the contributions from scientific community and professionals, but also on this aspect does not seem to be still a clear and defined vision. In 1969, with the US National Environmental Policy Act, it is established that prevention is better than redress. And the Environmental Assessment takes off. Decades have passed, and a sustainability assessment clearly outlined and organized - usually considered the efforts towards sustainability just as environmental assessment goals - till today is still hard to be detected (Gibson, Hassan, & Tansey, 2013). Sustainability Assessment (SA) is "a process by which the implication of an initiative on sustainability are evaluated, where the initiative can be a proposed or existing policy, plan, programme, project, piece of legislation, or a current practice or activity" (Pope, Annandale, & Morrison-Saunders, 2004, p.1). This is one of many definitions over time given to SA, and also many have been attempts to

apply, test and implement it. Gibson (2006) points out several requirements for SA implementation process as, for instance, the central role assigned to determination of contribution to sustainability, the correlation between evaluation and decision criteria, participatory mechanisms in decision-making and also a sufficient transparency to the public. Hacking and Guthrie (2008) propose an integrated approach to the recent assessment literature, trying to overcome the particularism of those contributions dealing SA issue in a fragmentary manner - and each one in their own positions - supporting instead a reconciliation to detect what has already been proposed and what does not for better addressing SA topics. Other contributions, then, observe that sustainability assessment needs a multi-criterion framework, which is considered an effective tool for a multi/interdisciplinary approach, and is also recommended by the social multi-criteria evaluation principles, according to which public participation, ethical judgment and the responsibility of scientists to society are also important elements (Munda, 2005). In further studies, an integrated sustainability assessment is defined as an active process capable of handling persistent problems through a shareable interpretation of sustainability and through harnessing the problem-solving potential of different contexts (Weaver, & Rotmans, 2006); and that requires methods and tools for assessing the multi-dimensionality of the SA in terms of multi scales, domains and generations (Rotmans, 2006).

A set of principles, the Bellagio Sustainability Assessment and Measurement Principles, have been developed in supporting practitioners to better manage the SA process, and “intended to help compiling, reviewing or managing these studies, sponsors and users as well as those who commission the assessment” (Bakkes, 2012, p. 242). Therebetween, principle n. 5 shows the importance of indicators application for measuring sustainable development, even though other calls for this type of assessment tool dates back to before Bellagio meeting, as Chapter n. 40 of Agenda 21, for instance, demonstrates. Principle n. 5 also provides indications for a limited number of indicators or combinations of indicators. But, considering number of such tools developed over time, recommendations of this Bellagio principle seem to have been disregarded (Bell, & Morse, 2008). This is testified by plethora of contributions for decades now focusing on such assessment tools, sometimes offering inventories, classifications, characterizations and reviews of them, useful for example to a deeper understanding methodologies underlying their composition or just for a general overview of their interest areas, or to test their potential in terms of effectiveness and relevance, or to asses practices of non-financial reporting of firms in them listed (Pearce, Hamilton, & Atkinson, 1996; Bockstaller, & Girardin, 2003; Ebert, & Welsch, 2004; Cloquell-Ballester, Cloquell-Ballester, V., Monerde-Díaz, & Santamarina-Siurana, 2006; Ness, Urbel-Piirsalu, Anderberg, & Olsson, 2007; Fowler, & Hope, 2007; Singh, Murty, Gupta, & Dikshit, 2009; Mori, & Christodoulou, 2012; Hak, Kovanda, & Weinzettel, 2012; Opschoor, & Reijnders, 2012; Slaper, & Hall, 2011; et al.).

This paper fits into the strand dealing with diffusion of information on indicators and indices as sustainability assessment tools. It proposes a review of two selected firms' sustainability indices, namely, Dow Jones Sustainability World Index (DJSI World) developed by Robeco Sustainable Asset Management (RobecoSAM), and Corporate Knights Global 100 Index. Constituents' lists of selected indices represent the perspective used for review proposed in this work. Observing variations occurred during a determinate period on performance of firms ranked into sustainability indices, allows to detect information regarding the evolution of performance of companies that over the years have been included in the lists. We argue that this approach could contribute to the literature on this issue, providing a particular point of view in addition to the existing researches aimed at the continuous knowledge enhancement of this particular assessment tool.

3 Methodology

This work attempts to contribute to the existing literature on conceptualizing, categorizing, and reviewing of sustainability assessment tools. To this end, a review of two selected firms' sustainability indices is proposed, i.e. Dow Jones Sustainability World Index (DJSI World) developed by Robeco Sustainable Asset Management (RobecoSAM), and Corporate Knights Global100 Index. DJSI World, launched in 1999, belongs to the Dow Jones Sustainability Index family, which in turn is part of the whole proposal of indicators developed by RobecoSAM. Based on a best-in-class approach, is both a benchmark for investors interested in sustainability, and for enterprises as a model of sustainability engagement, tracking the "top 20% of the largest 2,500 companies in the S&P Global BMI based on long -term economic, environmental and social criteria" (S&P Dow Jones Indices, 2014a, p.1); is characterized by a firms' selection methodology based an extensive industry-specific corporate social responsibility questionnaire, in order to reach the construction of an "Assessed Universe" for each index of the sustainability family indexes (S&P Dow Jones Indices, 2014b, p. 5). Less famous and celebrated, Global 100, the Corporate Knights Index, qualified by hundred companies ranked on the basis of twelve key performance indicators related to areas such as natural resources usage policies and employee management, follows a rules-based construction methodology, this uniting it with the financial indices rather than all similar sustainability indexes. Starting from an universe of all publicly traded companies with a market capitalization of at least two billion US dollars, Global 100 is based on a four-screen

stages methodology: Disclosure, about sustainability reporting activity; F-score, nine individual tests on some features of the company; Product category; and Sanctions, involving companies¹.

In this paper, we propose a review of these two indexes, based on time evolution of performance of companies included in their constituents' lists, and developed selecting several items following the Triple Bottom Line Sustainability Framework (Elkington, 2004), as well as revised by Savits and Weber (2007; 2014). The unit of analysis is represented by companies ranked in selected sustainability indicators, the unit of observation is represented, instead, by the economic, environmental and social performance of such companies. We considered firms' sustainability rankings related to the period 2005-2014 for Global 100, and 2005-2012 about DJSI World².

With reference to the Global 100, the sample consists of 337 firms (3370 observations); while for DJSI World it is 71 (with 568 observations). Lists of Global 100 Index are obtained via download from indicator website, and through formal request submitted to indicator developers, as regards rankings of Dow Jones Sustainability World Index. We extract data for corporate performance from Thompson Reuters Datastream Software over a period of ten years, from 2005 to 2014. In particular, from Asset 4 ESG Data we collect social, environmental and economic data, and financial indicators from Worldscope. Data selection criterion for firm performance is based on Triple Bottom Line Sustainability (TBL) framework, either in its original formulation by Elkington (1997, 2004), either in updating proposed by Savitz and Weber (2007; 2014). Considering the absence of a standard guide line for determining composition of corporate performance in the aspects prompted by TBL framework, i.e. environmental, financial and social, data availability will effectively guide the selection of data (Slaper, & Hall, 2011). Hereafter, performance variables selected to conduct the review and organized by TBL framework:

- *Economic performance variables: ROE; ROI; market-to-book*
- *Environmental performance variables: CO2 Emission; CO2 Reduction*
- *Social performance variables: Diversity and Opportunity Policy; Human Rights; Employment Quality/Policy; Product Responsibility.*

Respect to these considerations, and although this is a review article, we pose the following research question:

¹ See: <http://www.corporateknights.com/reports/2015-global-100/methodology>.

² The choice of these time frames depended on the availability of data obtained from the developers of the sustainability indices and on the fact that these are periods in which the effects of the global financial crisis were more recent.

RQ. *Is possible to characterize and categorize sustainability index on the basis of the composition of its constituents lists?*

And formulate the related hypothesis:

HP. *Is possible to characterize and categorize sustainability indices on the basis of performance variations of ranked firms in a certain time period.*

Arithmetic mean per year of observation of social and financial performance of ranked firms, carried out using SPSS software.

4 Results

Basing on the aim of the proposed review, obtained results are sorted in several tables, organized according to the different profiles of firm performance identified applying TBL framework. In the follow, data analysis is presented and discussed.

Starting from Global 100 Index, variations in economic, social and environmental ranked firms' performance, observed over a period of ten years (2005-2014), are presented in table1, 2 and table 3.

Table 1 - Ranked firms Economic Performance variations

	ROE	ROI	MTBV
2005	16,44	10,73	3,15
2006	18,09	10,66	2,77
2007	16,69	9,59	2,23
2008	17,02	9,59	2,38
2009	23,66	10,84	2,76
2010	17,04	11,20	2,53
2011	13,80	10,26	2,27
2012	17,55	11,29	2,87
2013	25,14	12,32	3,47
2014	23,97	11,76	3,03

Source: our elaboration.

Table 2 - Ranked firms Environmental performance

	CO2EMS	CO2RED
2005	50,90	55,81
2006	51,65	58,31
2007	51,71	53,31
2008	51,73	55,81
2009	51,70	57,42
2010	51,61	51,64
2011	51,74	56,23
2012	51,76	53,95
2013	51,76	56,48
2014	51,68	55,47

Source: our elaboration.

Table 3 - Ranked firm Social Performance variations

	PRESP	HUMRHTS	DIV&OPPS	EMPQS
2005	70,04	72,58	73,57	74,69
2006	72,66	78,42	75,48	76,27
2007	72,49	76,73	74,40	72,25
2008	68,43	76,99	73,89	74,79
2009	65,35	74,38	70,59	74,28
2010	62,80	73,93	72,78	70,22
2011	70,51	77,03	75,79	73,05
2012	67,92	78,47	75,35	72,26
2013	66,08	79,48	75,94	68,49
2014	65,76	72,10	72,53	68,10

Source: our elaboration.

Referring to DJSI World, Table 4 shows an overview of ranked firms' economic and environmental performance variations:

Table 4 - Ranked firms Economic and Environmental performance variation

		ROE	MTBV	CO2EMS	CO2RED
2005	Mean	15,61	3,22	71,88	60,01
	N	69,00	66,00	67,00	67,00
	Std. Deviation	16,88	2,34	28,77	31,70
2006	Mean	20,37	3,37	71,66	59,20
	N	69,00	67,00	67,00	67,00
	Std. Deviation	17,09	1,93	28,67	32,08
2007	Mean	23,75	3,82	72,63	64,34
	N	70,00	68,00	69,00	69,00
	Std. Deviation	24,98	2,62	24,37	33,92
2008	Mean	24,28	5,23	74,91	66,90
	N	71,00	69,00	70,00	70,00
	Std. Deviation	29,45	14,69	20,79	33,71
2009	Mean	9,23	2,24	75,75	67,50
	N	71,00	69,00	71,00	71,00
	Std. Deviation	34,81	2,19	20,54	33,62
2010	Mean	22,05	4,95	76,15	70,99
	N	71,00	70,00	71,00	71,00
	Std. Deviation	83,47	19,19	21,49	32,95
2011	Mean	24,45	3,54	76,56	71,60
	N	71,00	70,00	71,00	71,00
	Std. Deviation	39,88	5,57	20,25	32,76
2012	Mean	19,32	1,45	76,65	69,98
	N	71,00	70,00	71,00	71,00
	Std. Deviation	26,72	7,58	18,74	33,09
	Mean	19,89	3,48	74,57	66,42
	N	563,00	549,00	557,00	557,00
	Std. Deviation	39,80	9,39	23,09	33,09

Source: our elaboration.

The obtained results allow to confirm the hypothesis proposed in this paper, namely whether is possible to characterize and categorize sustainability indices on the basis of performance variations of ranked firms in a certain time period. Reviews of sustainability indexes are almost always based on their characteristics or on the underlying methodologies of their construction, and rarely focused on economic-financial and sustainability performance of ranked firms. This paper, shedding light on performance evolution of firms listed in sustainability rankings, provides an additional perspective of reviewing sustainability indices. This perspective could be interesting from both theoretical and practical point of view. The results of this analysis must be read from the perspective of ranked firms, rather than from that of sustainability indices (as almost always happens): being able to refer to an evolutionary framework of the performance of ranked firms could indirectly influence the

decision-making processes of firms in terms of sustainability. Entrepreneurs interested in the inclusion of their companies in the sustainability indexes, could use the information deductible from reviews such as the one proposed in this paper, to understand what are the performance levels that characterize the companies already listed; in this way, it is easier to implement any corrections in policy and decision-making process at any stages.

5 Conclusions

Governments, politicians, enterprises, scientists and scholars in different ways each and every one for their own purposes have responded to the call for sustainability assessment tools analysis. And so they studied, tested and built sustainability indicators and indices. There have been numerous studies in the time focused on the main issues to corollary of this issue, but so far there seems to be a clear and defined organization of that part of the literature that deals with sustainability assessment tools. Despite this situation, the scientific production, albeit in residual part, began to head towards attempts at reorganization of this topic, unfortunately, often failing due to excessive withdrawal of scholars, each in their area of research, neglecting potential synergies interdisciplinary valuable they ensure greater understanding and better utilization. This paper seeks to contribute to the literature on sustainability assessment tools, proposing a different perspective in reviewing firms' sustainability indexes, based on observation of performance variations of ranked firms, during a determinate time period. We argue that this perspective could be useful to support efforts of that part of scholars engaged in searching for more points of view from which investigate indicators and indices, trying to change general trend to an approach not always correct in this field. With the simple analysis in this work, we highlighted how sustainability rankings, often difficult in interpretation because produced by complex processes of selection of contractors, may be used as a perspective in reviewing sustainability indexes, as a means to characterize them on the basis of the observations that everyone can do interpreting objective data as the change in firm performance, certainly not affected by possible defects due to the complexity that has always characterized these assessment tools.

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