Extended Abstract: Sustainability performance evaluation using sustainability reports

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ABSTRACT

The aim of this study is to develop a method for evaluating the sustainability performance of firms using their published data in their sustainability reports. We looked at the sustainability reports of financial services companies in Australia for the period of 2011-2014. We used data envelopment analysis (DEA) to measure the sustainability efficiency scores of these firms.

INTRODUCTION

The concept of sustainability is generally considered to be a key topic in many countries [1] and its importance has been growing significantly [2] which increases the need to measure organisations' performance in this regard [3].

Corporate sustainability is considered as a combination of economic, ecological and social aspects in a relevant business strategy [4]. The number of firms paying more attention to social and environmental subjects in their reporting has considerably improved [4]. Sustainability reporting is considered to incorporate direct consequences of changes in society which have led to a higher rate of public monitoring of companies in terms of ethical behaviour [5].

According to Lee and Saen [6], the major challenge of corporations is to establish their contributions to sustainable improvement. The reason is the complications in measuring organisations' sustainability performance. Therefore there is a need to develop sustainability indicators and measurement models [6].

There are growing bodies of research on corporate sustainability [7]. Krajnc and Glavič [8] compared companies with each other according to their sustainability performance. They designed a composite index by using available data, Analytical Hierarch Process (AHP) method and surveying seven experts for calculating the weights of the different indicators. They applied their model to two companies and compared their sustainability performances. They considered using the experts' opinions for calculating weights and selecting indicators according to the availability of data as two of their study's limitations. Lukman, Krajnc [9] ranked universities according to their educational and environmental indicators. They did interviews and used the AHP model to calculate the weights of different indicators. They referred to the method of calculating the weights based on people's opinions as one of their study limitations.

Costa and Menichini [10] evaluated the social responsibility of organisations through integrating GRI indicators into BSC. Their case study consisted of interviews with managers of an Italian organization in cleaning industries.

Although there has been a significant increase in the amount of research on corporate sustainability performance measurement systems (SPMS) recently [4],[11], there are still many avenues in terms of design, implementation, usage and evaluation of these systems to be addressed [11]. Furthermore, even though there are increasing numbers of companies reporting their sustainability performance, sustainability performance measurement has not yet been studied comprehensively to the same extend as environmental impact evaluation [12],[13].

Moreover, Panayiotou, Aravossis [14] suggested a need for research in quantifying corporate sustainability reports (CSR) results and Daub [5] also refers to the considerable needs for more emphasis on the importance of sustainability reports. According to Schneider and Meins [4], the mere existence of sustainability reporting cannot be considered as evidence of a firm's sustainability and therefore, a system needs to be developed for evaluating and comparing their sustainability performance.

In order to address some of the previous limitations, we have aimed to:

Develop a method for evaluating the sustainability performance of organisations in an industry allowing longitudinal and cross sectional comparisons among organisations in the same or different industries.

RESEARCH BODY

The aim of this research is to come up with a way of evaluating sustainability performance of organisations using the data reported in their sustainability reports. The Global Reporting Initiative (GRI)[1] guidelines were used in order to standardise the sustainability indicators of organisations. We analysed the sustainability data published in sustainability reports of 12 Australian financial service (FS) companies for the period of 2011 to 2014.

We first looked at the level of disclosure. We used the Wiseman index [16] to calculate the disclosure level of sustainability reports of these companies. We looked at the level of coverage of each GRI-G4 indicators and assigned a score to each of them ranging from "0" for "not reported" to "3" for quantitative measures.

Our study aim was to evaluate the sustainability performance of FS firms using some of the GRI indicators. We considered all the indicators as inputs and sales as the output of the companies with the aim to minimize those inputs. The following model is for input-oriented DEA where inputs are minimized assuming outputs are kept at their current levels: [17]

$$\theta^* = min \ \theta \qquad [1]$$

Subject to:

$$\sum_{j=1}^{n} \lambda_j x_{ij} \leq \theta x_{io} \qquad i=1, 2, ..., m;$$

$$\sum_{j=1}^{n} \lambda_j y_{rj} \geq y_{ro} \qquad r = 1, 2, ..., s;$$

$$\sum_{j=1}^{n} \lambda_j = 1$$

$$\theta, \lambda_j \geq 0 \qquad j = 1, 2, ..., n.$$

Where:

$\theta^* = input - oriented \ efficiency \ score \ of \ DMUo$

$x_{io}: i^{th} \ input \ for \ DMUo$

$y_{rj}: r^{th} output \ for \ DMUo$

We used those indicators with full data across the sample as the base case in our DEA model to measure the efficiency scores of the sample companies. DEA is sensitive to missing and zero values. Therefore indicators with no or very few quantitative measures were excluded.

There were also other indicators with some missing values or value "0". If there were enough values for each indicator in companies (at least for two years out of four years of data per company), we estimated missing values by calculating the average of the known measures, given the assumption that they did not have significant changes. For "zero" figures, we added 1 unit to all measures for all companies for that specific indicator. In this case, we could include data with "zero" in our calculation without affecting their relative performance to the other measures of that indicator.

The results are as below:

Company	2011	2012	2013	2014
ANZ	0.47	0.50	0.47	0.48
Australian ethical investment	1	1	1	0.91
Bankmecu	0.95	0.89	1	0.99
Commonwealth bank of australia	0.80	0.79	0.79	0.75
ING direct	1	1	1	1
Insurance australia group	0.89	0.86	0.83	0.78
Macquire limited	1	1	1	1
National bank of australia	0.65	0.61	0.57	0.58
Suncorp group	1	1	1	1
UCA fund management	1	1	1	1
VICsuper	0.58	0.76	0.57	
Westpac	0.65	0.60	0.66	0.61
Industry average	0.83	0.83	0.82	0.83

TABLE 1: SUSTAINABILITY EFFICIENCY SCORES OF AUSTRALIAN FS COMPANIES FROM 2011 TO 2014.
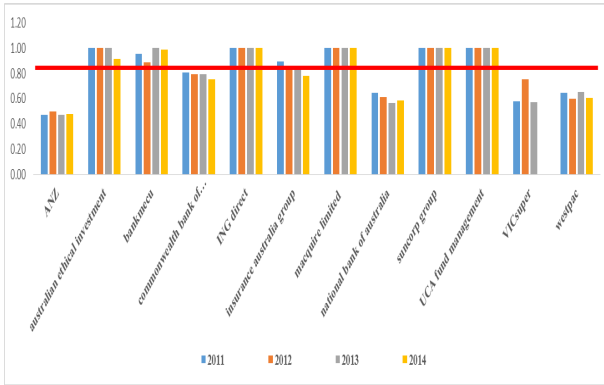
FIGURE 1: SUSTAINABILITY EFFICIENCY SCORES OF AUSTRALIAN FS COMPANIES FROM 2011 TO 2014.

The maximum efficiency score is one and those companies with an efficiency score of one are considered to be efficient. The rest of the firms are ranked accordingly. As can be seen, firms may not be efficient across the total study period. Australian ethical investment was efficient for three years but its score declined slightly in 2014. Bankmecu was efficient only in 2013 but its efficiency scores were above the industry average over the study period. ANZ, Commonwealth bank of Australia, NAB, VICsuper and Westpac had efficiency scores below the industry average across the study period. ING direct, Macquarie limited and Suncorp group remained efficient over the whole study period.

SUMMARY

In this study, we developed a method for evaluating sustainability performance using DEA. We used DEA and actual reported measures of firm's sustainability performance to come up with the efficient scores of each firms. Since we used sales as the output and a variable returns to scale DEA model, therefore, we controlled for the effect of company size in our calculation. We can use the sustainability efficiency scores of firms to compare them with their peers in an industry or with the average score of industry. We can also compare these scores with the other industries. This method also enables us to trace the trend of firms' sustainability performance over time to analyse their improvement. This method has potential to be used for each perspective (i.e. economic, environment and social) of sustainability separately to identify specific areas of improvements in each firm or even industry. One limitation of this study was that we had to exclude many of the GRI indicators due to lack of data or quantified measures. Further study can use data from other sources using DEA to evaluate the sustainability performance of firms.

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