

# The Weight of Corporate Social Responsibility Indicators in Measurement Procedure

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**Abstract**—The Corporate Social Responsibility (CSR) performance has garnered significant interest during the last two decades as numerous methodologies are proposed by Social Responsible Investment (SRI) indexes. The weight of each indicator is a crucial component of the CSR measurement procedures. Based on a previous study, the appropriate weight of each proposed indicator for the Greek telecommunication sector is specified using the rank reciprocal weighting. The Kendall's Coefficient of Concordance and Spearman Correlation Coefficient non-parametric tests are adopted to determine the level of consensus among the experts concerning the importance rank of indicators. The results show that there is no consensus regarding the rank of indicators in most of stakeholders' domains. The equal weight for all indicators could be proposed as a solution for the lack of consensus among the experts. The study recommends three different equations concerning the adopted weight approach.

**Keywords**—Corporate Social Responsibility, Indicator, Weight.

## I. INTRODUCTION

THE recent corporate scandals bring more and more attention to the concept of stakeholder management and CSR. A number of definitions are proposed to make the concept of CSR explicit as there is no solid perception. The notion of CSR is constantly changing and means different things to different stakeholders, firms and countries [63], [59], [16]. Reference [2] mentions that the corporate responsibilities are distinguished in four domains: economic, legal, ethical and discretionary, supporting the multi-stakeholder construct of CSR. According to [56], CSR is the obligations of firms to their stakeholders and more specifically to those that are affected by corporate operations. Similarly, the concept of society is too broad, thus, the stakeholders approach is adopted to personalize social responsibilities by delineating the specific groups that a business should consider in its orientation [18], [48], [42]. Reference [35] argues that a socially responsible company should concentrate on the

expectations and needs of multiple stakeholders. Reference [23] introduces a definition for the CSR supporting that “*it is about enterprises deciding to go beyond minimum legal requirements and obligations stemming from collective agreements in order to address societal needs*”. It is thus concluded that the CSR relates to whether companies will comply only with the legitimacy or will move beyond compliance.

During the last two decades the interest in the CSR concept has been transferred to the assessment of the performance mostly by SRI indexes. Setting the weight or groups of indicators is a crucial component of performance measurement procedure. Generally, two approaches exist regarding the weight of indicators, the first one recommends different weight while the other, equal. None of the methodologies differentiate the weight of indicators concerning the sector and the country where companies operate. The specification of weight still remains a challenging topic that should be addressed while numerous methods are proposed for setting the weight such as public or investors' opinion polls, expert assessment and impact equivalents [19], [47], [3].

The study is based on a previous survey regarding the appropriate indicators for the assessment of CSR performance [27]. Since general and sector-specific indicators have been determined using the Delphi method, the aim of this study is to set the appropriate weight for each indicator measuring the CSR performance. Finally, the level of consensus among the respondents is investigated using the non-parametric tests of Kendall's coefficient of concordance  $W$  (Kendall's  $W$ ) and Spearman Correlation Coefficient (Spearman  $r_s$ ).

The literature review of CSR performance and assessment methodologies are illustrated in Section 2. Section 3 describes CSR in Greece while in Section 4 an illustration of the methodology follows. Section 5 presents the results while in Section 6 the conclusion is presented.

## II. LITERATURE REVIEW

### A. CSR performance

Reference [18] defines CSR performance as “*a business organization's configuration of principles of social responsibility, process of social responsiveness, and policies, programs, and observable outcomes as they relate to the firm's societal relationships*”. According to [1], the assessment of CSR performance is an important issue both for business and society while it is in the center of concerns by authors [41], [36], [37] and organizations (SRI indexes). One of the major concerns is whether valid measures can be developed while the importance of subjective measurement

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should be expected by good management [1]. Reference [40] notes that the difficulty of making subjective measurement of CSR performance may lead to different perceptions of outcomes. By assessing CSR performance, companies have the opportunity to identify their strengths and weaknesses, modify their strategies and define opportunities for improvement [51], [45].

According to [38], there are five different approaches in order to assess CSR performance: measurements based on the analysis of the contents of annual reports, pollution indices, perceptual measurements derived from questionnaire based surveys, corporate reputation indicators and data produced by measurement organizations. Reference [33] categorize similar measurement approaches into three main categories: expert evaluations, single- and multiple-issue indicators and surveys of managers, while [20] proposes approaches such as reputation indices and databases, single- and multiple -issue indicators, content analysis of corporate publications scales measuring CSR at the individual level, and scales measuring CSR at the organizational level. Finally, [41] recommends measurement approaches namely, survey methodology, reputation index and rating, and content analysis of documents.

Regarding the multiple indicators approach, there is no single way of assessing CSR performance [54] as different rating organizations are available. However, there are cases of companies that prefer internal evaluation of their performance in order to protect valuable internal information that could affect their competitiveness advantages. Table 1 presents methodologies that assess CSR performance and recommend multiple stakeholders proposed by SRI indexes.

TABLE I  
SRI INDEXES ASSESSMENT METHODOLOGIES

A/A	Methodology
1.	[64]
2.	[70]
3.	[67]
4.	[71]
5.	[66]
6.	[25]
7.	[69]
8.	[65]
9.	[68]

Even if most of the methodologies do not publish sensitive information of their procedure [43], [26] there are five main topics of assessment procedures:

1. Predetermining stakeholders,
2. Suggestion of indicators,
3. including or excluding sectors,
4. selection of companies and
5. adoption of indicators weight.

#### B. Predetermining stakeholders

All methodologies adopt a multi-stakeholder construct contrary to approaches that assess performance in a single dimension of business stakeholders such as Toxic Release Inventory for the environmental dimension [39], [4],

sponsorship of community activities [55] and product recalls [62]. Six are the main stakeholders of [68] methodology namely, governance, community, environment, suppliers, customers and employees-human resources. The [66]-Domini index takes into account domains such as community, corporate governance, diversity, employee relations, environment, human rights, product and controversial business issues, the [69] considers four dimensions in the assessment procedure, namely, business ethics, workplace and human rights, community investment and environment, while [70] consider four domains such as internal, external, environmental and economic policy. The majority of the methodologies do not include adequate indicators of important stakeholders such as suppliers. Reference [69] and [70] do not pay the required attention to corporate governance, health and safety, to personnel and employee participation while the [25] index recommends limited indicators to customers [24]. The proposed categories are broadly defined where the categorization process becomes a very difficult procedure and, probably, a misleading one.

#### C. Suggestion of indicators

Methodologies attempt to recommend indicators that reflect a broad consensus on what constitutes good CSR. Generally, there is no agreement regarding the appropriate indicators and their number. The [65] introduces more than 200 indicators, the [25] includes 71 indexes where each one contains up to 9 sub-indicators and the [64] introduces more than 48. However, the literature of performance measurement recommends 3 to 6 indicators for each stakeholder [58], [53]. There are methodologies that include indicators relative to the market or country characteristics. According to [21] the selection and the development of indicators should be made with caution as not all indicators are valuable to every country. References [69] introduce indicators that are highly related to Israel market, the [66]-Catholic values 400 index considers the catholic investors values and the [25] recommends indicators that are compatible with specific characteristics from companies within South Africa. Finally, only the [64] methodology proposes both general and sector-specific indicators to include the specific challenges and trends of each sector. However, [66] analysts are specialized by sector assuring the quality of assessment, [71] and [25] recommend environmental indicators regarding the sector where companies operate.

#### D. Including or excluding sectors

The [65] does not include companies that are involved in production of sectors such as nuclear power, manufacture of tobacco products and weapons and [67] excludes sectors such as tobacco, alcohol, pornography, casino games or military weapons. The [66] does not include businesses that operate in adult entertainment, alcohol, extraction or processing of uranium and gambling. The [64] does not exclude sectors from the assessment procedure but it offers sub-indexes for investors with social concerns, thus, offers indexes such as

[64] excluding alcohol or gambling or tobacco. The [70], [25] and [68] take into account all types of sectors in the measurement procedure. It is obvious that there is no agreement as to whether all types of sectors should be included in assessment procedure or not.

#### E. Pre-selected companies

The [64] includes in its methodology specific types of companies, for example the [64] World consider the top 10% of the 2500 largest companies in Dow Jones Global Indexes. The [69] rates both private and public companies in Israel which are committed to the Tel Aviv 100 or their annual profit is greater than \$100 million. Reference [25] identifies companies that are members of FTSE/JSE Africa index, while the [66] assesses primarily large-cap U.S stock companies. The [70] covers stock companies based on S&P Global 1200, [65] takes into account stock companies operating in Canada, [67] considers in its assessment procedure the 1.000 largest companies in the U.S included the Dow Jones Total Market Index, while [71] assesses companies that are members of FTSE All-share index (UK) or FTSE Developed Index (Global). The [70] family indexes are designed to approximate the sector weights on the S&P Global 1200, while [68] includes the 120 best companies of the DJ EURO STOXX.

#### F. Adoption of indicators weight

There are two approaches regarding the weight of indicators. The first approach recommends that the indicators weight should affect differently the total performance score concerning the relative importance of indicators to society such as [64]. Not only is each indicator weighted according to its importance but also each proposed stakeholder is weighted in order to balance their needs and expectations. The second approach recommends equal weight to all indicators which means that all of them affect the total performance score equally such as [70]. Reference [3] quotes that this approach can be used as a solution of the arbitrary weight of indicators while the best would be to let the investors set their weights according to the importance of indicators. The methodologies do not explain the origin of the different weight of indicators contrary to [3] that supports the opposite. However, some methodologies such as [71] and [25] adopt EIRIS' environmental classification as different sectors affect the natural environment differently. Additionally, none of the methodologies differentiate the importance of indicators as regards the sector where companies operate contrary to [26] where the weight of indicators should be differentiated. However, [68] may propose different weights for different sectors or countries [34]. There is no agreement among the methodologies regarding the importance of indicators, probably because the measurement organizations or corporations responsible for the methodology formation adopt different perceptions for the CSR concept.

### III. CSR IN GREECE

As far as the Greek market is concerned, several studies analyze the companies' stock price [14], [7], [22] [49], [77]. However, there is a significant number of studies that deals with CSR [13], [12], [31]. The small and medium size is one the most important reasons why the Greek companies do not integrate extensively CSR in their operations or the adopted CSR practices will not have the same results [61] as the literature review connects the CSR concept to multinational and generally to bigger size companies. Reference [32] attempts to examine the Greek-owned short sea shipping companies. The majority of the respondents are not involved in CSR practices because of Greek entrepreneurial culture, lack of information and low respect of CSR contribution to business performance, even though the managers seem to react positively to new managerial approaches. Companies focus their practices on specific domains of CSR such as product quality, employees, environment, culture and sports [11]. Reference [8] assesses the CSR performance of stock and non-stock companies operating in different countries including Greece. Regarding the results of AR (2008) in Greece, 66 companies present sufficient performance. As far as the telecommunication sector is concerned, Vodafone provider takes the second place, Cosmote stands in the fifth place, Hellenic Telecommunications Organization (OTE) stands in the 9th place while Wind is placed as 24. Totally, nine stock companies are assessed by SRI indexes while only two telecommunication companies are included in [71] Europe Index and [71] Global Index, Table 2 [75].

The limited integration of CSR standards by Greek companies denotes that they cannot perceive the value of CSR and its benefits.

TABLE II  
 GREEK LISTED COMPANIES IN SRI INDEXES

SRI indexes	Company	Sector
[70]	[70] Pioneer Global, April 23, 2009	Emporiki Bank Banks
	[70] Excellence Europe, April 23, 2009	Emporiki Bank Banks
[71]	[71] Europe Index, April 17, 2009	Alpha Bank Banks
		Bank of Piraeus Banks
		Coca-Cola (Griechenland) Food & Beverage
		EFG Eurobank Banks
		Ergasias Bank Banks
		Emporiki Bank Banks
		Greek Organisation of Football Prognostics others
		OTE Telecommunications
		National Bank Of Greece Banks
		Cosmote Mobile Communications Telecommunications
	[71] Global Index, April 17, 2009	Alpha Bank Banks

2009	Bank of Piraeus	Banks
	Cosmote Mobile Communications	
	EFG Eurobank Ergasias Bank	Banks
	Greek Organisation of Football Prognostics	others
	OTE	Telecommunications
	National Bank Of Greece	Banks

The Awareness & Social Behavior Index (A.S.B.I) comprises the greatest methodological research on CSR since 2003 recording the trends of the Greek society where only three telecommunication providers are included, Table 3 [9].

TABLE III  
TELECOMMUNICATION COMPANIES  
INCLUDED IN A.S.B.I, 2008

Company	Rank	Final Score
Cosmote Mobile Communications	2	8
OTE	4	6,8
Vodafone	7	5,3

Regarding the CSR reports in Greece, there are ten companies from different sectors adopting GRI's principles, three of which belong to the telecommunication sector, Table 4 [30].

TABLE IV  
GREEK [30] REPORT LIST

Confirmation Date	Organization	Report Title
	Athens International Airport Corporate	Responsibility Report 2007
	Coca-Cola HBC	Social Report 2007
8/9/2008	Cosmote*	CSR Report 2007
10/2/2009	Frigoglass	Corporate Social Responsibility report 2007
10/2/2009	National Bank of Greece	Corporate Social Responsibility report 2007
	OTE*	Corporate Responsibility Report 2007
13/8/2008	Piraeus Bank Group	Corporate Responsibility Report 2007
8/9/2008	S&B Industrial Minerals	Social Report 2007
23/7/2008	Titan Cement Group	2007 Corporate Social Responsibility and Sustainability Report
28/11/2008	Vodafone Greece*	Corporate Responsibility Report

Source: [30], \*Telecommunication company

#### IV. METHODOLOGY

The study is based on a previous survey regarding the appropriate indicators for the Greek telecommunication sector. Eight experts rank the importance of multiple stakeholders' indicators proposed through the content analysis of CSR annual reports "to be published" [24]. The rank reciprocal weighting approach is used to determine the weight of each

indicator assigning the numerical value of 1 to the most important indicator, while N the least important indicator, where N is the number of indicators. The reciprocal or 1 divided by each of the numbers so assigned is then taken, and these reciprocals are normalized [76]. In this study, the weight of each indicator is presented in percentage. The Kendall's W is used in order to examine the level of agreement among the respondents. The Kendall's W varies between 0, no agreement among respondents, and 1, perfect agreement among respondents while the null hypothesis claims that there is no agreement on rankings [57], [52], [6], [50]. The Kendall's W is used in different fields of research and it is compatible to CSR field as it is used to sustainable tourism [28]. The value of W is explained according to [15] interpretation scale. In case there are no ties, the Kendall's equation is given by

$$W = \frac{\sum_{i=1}^k (\bar{R}_i - \bar{R})^2}{N(N^2 - 1)/12} \quad (1)$$

Where: k = number of sets of rankings

N = number of objects or individuals being ranked

$\bar{R}_i$  = average of the ranks assigned to the *i*th object or subject

$\bar{R}$  = average of the ranks assigned across all objects of subject

$N(N^2 - 1)/12$  = maximum possible sum of the squared deviations

Additionally, the Spearman's  $r_s$  is adopted for investigating the agreement for each pair of respondents. The values range between -1 and +1 which means negative (-1) or positive (+1) correlation-agreement for each pair of experts, while the 0 value means no association between the two experts [44], [57]. The Spearman's  $r_x$  test is compatible with CSR field since [5] it is adopted to calculate the correlation among economic, environmental and social indicators. The equation is given by

$$r_s = 1 - \frac{6 \sum_{i=1}^N d_i^2}{N^3 - N} \quad (2)$$

Where: N = the number of values in each data set

$d_i = X_i - Y_i, N=1, 2, \dots, N$

The Kendall's W is a simple function of the average Spearman's  $r_s$  among all  $k(k - 1)/2$  distinct pairs of judges [29]. The Kendall's W is closely related to Spearman's  $r_s$  as it expresses the association between two variables measured in, or transformed to, ranks. The equation of Spearman  $r_s$  between

$\binom{k}{2}$  possible pairs of rankings is given by

$$ave(r_s) = \frac{kW - 1}{k - 1} \quad (3)$$

When  $ave(r_s) = +1$  or  $-1$  then  $W=1$  and when  $W=0$  then  $ave(r_s) = -1/(k-1)$  [52].

The value of the  $ave(r_s)$  is the linear function of the W value and it takes the values between  $-1/(k-1)$  and  $+1$  [52], [46]. The  $ave(r_s)$  and Kendall's W are equivalent and both give the same results [17]. The only difference is that  $ave(r_s)$  takes values from  $-1/(k-1)$  to  $1$  [57].

## V. RESULTS

According to [27] there are six domains (stakeholders) and two of them are split into two sub-domains, namely: suppliers, customers, human resources, environment, corporate governance (CSR management and report) and society (digital divide and corporate citizenship). In this section, the weight of each indicator and the level of consensus regarding the rank of importance are presented.

Concerning suppliers, the Kendall's W shows that there is no consensus among the experts regarding the importance of indicators and the Spearman's non-parametric test indicates five pairs of experts highly related at 5% statistical significance, Spearman's  $r_s = .9$  or  $-.9$ , Table 5. The indicator of criteria selection receives the maximum importance in the supplier domain with 28,3%, almost the double importance from the least important indicator of transparency (15,6%), the collaboration indicator stands in the second place with 23,8% while audits and fulfillment of responsibilities correctly and timely receive the same weight with 16,2%.

TABLE V  
SUPPLIERS

Indicators	Rank reciprocal weighting
Criteria selection	28,3%
Collaboration	23,8%
Audits	16,2%
Fulfillment of responsibilities correctly and timely	16,2%
Transparency	15,6%

In customers' dimension, the Kendall's W shows weak agreement regarding the rank of indicators importance, Kendall's W = .393, while three pairs of experts are positively related, Spearman  $r_s$  ranges from .829 to .886, Table 6. The indicators of responsible marketing, customers' update and responsible technology are distinguished regarding their importance in CSR assessment procedure and they are almost two times more important than the least important indicator in a number of surveys satisfaction. It would be expected the quality of services to be ranked in the first places of weight; however, it receives only 11,4%, two times less important than the first two indicators.

TABLE VI  
CUSTOMERS

Indicators	Rank reciprocal weighting
Responsible marketing	24,9%
Service	20,2%
Responsible technology	19,2%
Customers' update	14,7%
Quality	11,4%
Number of surveys satisfaction	10,6%

According to Kendall' W there is a moderate consensus among respondents for personnel's domain, Kendall's W = .685, while Spearman's  $r_s$  shows sixteen pairs of companies related positively both at 5% and 1% statistical significance, Spearman's  $r_s$  ranges from .714 to .976, Table 7. The indicators regarding health and safety, and equal opportunities

are multiple times more important than indicators such as personnel entertainment and flexible working programs, while the assessment and benefit-bonus indicators receive the same importance of 9%, three times less important than the first important indicator.

TABLE VII  
HUMAN RESOURCES

Indicators	Rank reciprocal weighting
Health and Safety	29,2%
Equal opportunities	18,5%
Training	12,5%
Assessment	9,7%
Benefits-bonus	9,5%
Employees' Satisfaction	8,2%
Personnel entertainment	6,5%
Flexible working programs	5,8%

Taking into account Kendall's W, there is no agreement concerning the importance of CSR management indicators and the non-parametric test of Spearman's  $r_s$  there are only three related pairs of experts, Spearman's  $r_s$  ranges from  $-.893$  to  $.893$ , Table 8. The compliance with CSR international standards or principles receives the greatest importance of this domain with 19%, the weights of differentiation of stakeholders receives 15,7%, while the risk management, identification of stakeholders expectations and CSR in decision procedure receive approximately the same importance, 14,2%. At the last place of importance, it is the CSR transmission receiving only 9,6%, multiple times less important than the first indicator.

TABLE VIII  
CSR MANAGEMENT

Indicators	Rank reciprocal weighting
Compliance with international standards and principles	19,1%
Weight differentiation of stakeholders	15,7%
Risk management	14,7%
Identification of Stakeholders expectations	14,2%
CSR in decision procedure	13,8%
Assessment of CSR results	12,9%
CSR transmission	9,6%

The Kendall's W shows no agreement regarding the importance on report indicators and Spearman's  $r_s$  reveals high correlation, Spearman's  $r_s = -1$  or  $1$ , among 12 pair of experts, Table 9. The presentation of quantitative or comparable data receives great importance in the measurement procedure while the other two indicators receive approximately the same importance with 28% and 26% respectively.

TABLE IX  
REPORT

Indicators	Rank reciprocal weighting
Presentation of quantitative or comparable data	46%
Publication of legislative offences or/and fines	28%
Conclusions by internal or external stakeholders or organizations for the completeness of CSR report	26%

Regarding corporate citizenship indicators, no consensus exists among experts and only three pairs of experts are highly related, the Spearman's  $r_s$  ranging from -.893 to .893 at 5% of statistical significance. The difference among the indicators' weight is negligible. The indicators of philanthropy and voluntary programs weigh the same with 21,65%, the commitment in research programs and dialogue with stakeholders weigh 19,85% and the sponsorships is ranked in the last place. However, the Greek telecommunication companies spend great financial capitals on sponsorships mostly on sports, Table 10.

TABLE X  
CORPORATE CITIZENSHIP

Indicators	Rank reciprocal weighting
Philanthropy	21,65%
Voluntary programs	21,65%
Commitment to research programs	19,85%
Dialogue with stakeholders	19,85%
Sponsorships	17,01%

According to the non-parametric test of Kendall's W, there is no agreement concerning the weight of each indicator in digital divide domain while the Spearman's  $r_s$  indicates that two pairs of experts related positively at 5% statistical significance, Spearman's  $r_s = .9$ , Table 11. The results show that the most important indicator is the telecommunication infrastructure in remote and sparsely populated areas with 28%. The indicators of equal access to products/services and education and/or information of product and services advantages are equally weighted, while the indicator of free product/service distribution or in adaptable prices has the smallest importance in this domain being two times less important than the first indicator.

TABLE XI  
DIGITAL DIVIDE

Indicators	Rank reciprocal weighting
Infrastructure development in low population density and/or remote areas	28%
Confirmation of proper function after emergency situations	21%
Equal access to groups with special needs	19%
Education on the benefits of products and/or services	18%
Free product/service distribution or in adaptable prices	14%

Concerning the stakeholder of environment, the Kendall's W reveals that no agreement exists among companies and the Spearman's  $r_s$  results show no relation of pair experts, Table 12. Almost all indicators have the same weight which means the same importance ranging from 24% to 26%.

TABLE XII  
ENVIRONMENT

Indicators	Rank reciprocal weighting
Electromagnetic radiation from telecommunication networks	26%
Recycling or reusing	25%
Responsible development of networks	25%
Saving programs of natural sources and energy	24%

In Table 13, it is presented which stakeholder is firstly "paid attention" by managers knowing as prioritization process. According to Kendall's W there is no agreement among the experts as regards the importance of categories. The Spearman's  $r_s$  indicates that two pairs of experts are positively related at 5% level of statistical significance, Spearman's  $r_s = .886$  and  $.943$ . It is obvious that the importance of customer domain is 24%, approximately two times more important than suppliers and society while the dimension of personnel is ranked in the second place with 19% and the environment domain weighs 17%.

TABLE XIII  
STAKEHOLDERS

Stakeholders	Rank reciprocal weighting
Customers	24%
Personnel	19%
Environment	17%
Corporate Governance	15%
Society	13%
Suppliers	12%

The next table presents totally the results of Kendall's W and  $ave(r_s)$ , the linear function of Kendall's W. As a solution for the disagreement of weight indicators, the equal weight for all indicators and stakeholders can be proposed. The CSR concept in Greece still remains in infancy stage, thus, consensus concerning the importance of indicators would not be expected. However, as the customer domain is a very important stakeholder because of the stiff competition and employees are very crucial business component for competitive advantage, the experts have a more explicit perception concerning the CSR practices, indicators and their importance. Concerning the Spearman's  $r_s$  results, no obvious conclusions can be inferred for the agreements or disagreements of experts. The last column presents the number of pairs of experts that are related either positively or negatively as concluded from the non-parametric test Spearman  $r_s$ .

TABLE XIV  
KENDALL'S W RESULTS

Stakeholders	Kendall's W	Interpretation of Kendall's W	$ave(r_s)$	Pairs of experts
Suppliers	.228	No agreement	.03	5
Environment	.006	No agreement	-.32	0
Digital divide	.234	No agreement	.04	2
Corporate citizenship	.038	No agreement	-.20	2
Report	.297	No agreement	-.05	12
Personnel	.685*	Weak agreement	.64	16
CSR			.03	3
management	.169	No agreement		

Customers	.393*	Moderate agreement	.27	3
Stakeholders	.214	No agreement	.06	2

\*Statistical significant at 99%

In case that the different weight of indicators and stakeholders is adopted, the equation which calculates the total CSR performance score compatible to [64] is given by

$$CSR_P = \sum_{i=1}^n (W_j * W_k * W_i * P_i) \quad (4)$$

Where: CSR<sub>P</sub> = overall CSR performance  
W<sub>j</sub> = weight of domain (stakeholder) j  
W<sub>k</sub> = weight of sub-domain k  
W<sub>i</sub> = weight of indicator i  
P<sub>i</sub> = performance of indicator i  
n = total number of indicator

In cases where the different weight of indicators is adopted while the different weight of stakeholders is excluded, the equation is provided by

$$CSR_P = \sum_{i=1}^n (W_i * P_i) \quad (5)$$

Where: CSR<sub>P</sub> = overall CSR performance  
W<sub>i</sub> = weight of indicator i  
P<sub>i</sub> = performance of indicator i  
n = number of indicators

In case of equal importance among the indicators and the stakeholders, the equation is given by

$$CSR_P = \sum_{i=1}^n (W * P_i) \quad (6)$$

Where: CSR<sub>P</sub> = overall CSR performance  
P<sub>i</sub> = performance of indicator i  
W = equal weight for all indicators  
n = number of indicators

The additive aggregation procedure is adopted for three main reasons [72], [73], [74]:

1. easier computational analysis,
2. easier to be understood and explained by decision makers and
3. used on cases where multiple respondents are involved

Finally, the additive equations are compatible to [19], [47], [60], [64]. However, the [68] index implement a geometric average for each of its five criteria.

## VI. DISCUSSION

The assessment of CSR performance receives great attention by scientists, practitioners and organizations. The lack of studies that examine the weight of indicators in assessment procedure triggered the interest of the authors. The most important and well known methodologies are those proposed by SRI indexes which recommend to socially responsible investors, companies which integrate social standards. Generally, two different approaches exist regarding the weight of indicators where the first one proposes different weight, while the second approach recommends equal weight.

This study is based on a previous survey that proposes general and sector-specific indicators of eight experts in order to assess the CSR performance. The proposed indicators refer to multiple-issue indicators focusing on the Greek telecommunication sector. For each group of indicators, the rank sum weight tool is adopted to determine the weight, while the non-parametric tests of Kendall's W and Spearman r<sub>s</sub> are used to detect the consensus among experts. The results show that there is no agreement regarding the importance of indicators in each stakeholder domain, except customer and employee, thus, the equal weight of each indicator could be proposed as a solution for the lack of consensus. Additionally, no agreement exists concerning the importance of stakeholders, thus, the equality of stakeholders could be recommended as a solution. Totally, three different equations that calculate the CSR performance score are proposed for the different weight approaches according to the value tree of CSR aggregate index recommended by [27]. The scoring system of CSR performance is an issue that needs to be further clarified.

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