

Corporate Sustainability Performance Measurement: Narrative Review of Literature on Dimensions of Corporate Sustainability Indices

Asif Jalal

Ph.D. Scholar

Management Sciences Department, City University Peshawar

asifjalal10@gmail.com

Muhammad Zahid

Professor

Bahria Business Schools, Bahria University Pakistan

mianmz11@gmail.com

&

Muhammad Asif

Associate Professor

Management Sciences Department, City University Peshawar

asifbaloch@cusit.edu.pk

Abstract

The concept of corporate sustainability has gained immense significance in the last few decades. Several indices have been developed to measure corporate sustainability performance (CSP) among different sectors of industry and corporate firms. These indices cover different aspects of sustainability practices, however, the concept of corporate sustainability performance has widened with the emergence of ESG, Sustainable Development Goals (SDGs) and circular economy (CE) concept and these dimensions need to be included in an index of sustainability performance. The aim of this study is to review different corporate sustainability indices (CSI) and analyze the dimensions of sustainability upon which they are based. This study also reviews the utilization of indices for measuring the impact of corporate sustainability practices on firm's financial performance (FFP). A comprehensive search of literature was carried out to review different CSI and narrative review methodology was utilized to assess the utility of the indices. Specific search strings were formulated and Dimensions database was used to extract bibliographic data. This study will enable researchers to find CSI dimensions that best suits their research objectives. The items of a particular dimension of sustainability have not been covered in this study. This study will also provide the limitations of existing indices and provide future directions in development of integrated sustainability measurement indices.

Key Words: Corporate Sustainability, Index, ESG, SDGs

Introduction

The concept of sustainability gained momentum in the 1950's with the writing of Bowen (1955) in his book "Social responsibility (SR) of the businessman" (Bowen, 1953). Concept of SR led to "Corporate Social Responsibility" (CSR). CSR is dominated by the social aspect of sustainability, therefore gradually it was taken over by the broader concept of Environmental, Social and Governance (ESG) sustainability. ESG was incorporated to reflect the firms' efforts in integrating sustainability in their business (Halid et al., 2023). ESG sustainability, Circular Economy (CE) and the Sustainable Development Goals 2030 (SDGs) are important aspects of the sustainability paradigm. ESG reporting, i.e. the disclosure of ESG activities to stakeholders (R. Gray, 1994) has become quite popular among organizations primarily due to the relentless pressure of stakeholders (Dissanayake et al., 2016). The fundamental tool for assessment of corporate sustainability are the indicators/indices that are simple measures used to quantify the state of environmental, social or economic development in a specific firm. These indices collect the sustainability performance parameters from the sustainability reports of firms. However, a plethora of different frameworks are used by firms for presenting their corporate sustainability performance (CSP) to stakeholders. There is lack of standardization in this field and some CSIs may be presenting limited view of their contributions to people, planet and profit. This lack of

standardization may have occurred due to different interpretation of CSP among different firms, thus making it difficult to compare the performance of firms. With the emergence of SDGs and its rapid adaption at national and global level, the sustainability paradigm could have been amended to make SDG reporting mandatory for corporate firms; similarly the emerging concept of circular economy has also been included in the broader definition of sustainability. These new dimensions have given a new shape to the paradigm of sustainability, therefore, this study will also present CSIs that are based on ESG as well as SDGs and CE. Rating of sustainability reports through index enables the regulatory bodies to identify the sustainability performance of listed firms and it also enables tracking the progress of sustainability efforts over extended time periods. An index comprising all the paradigms of sustainability would provide a holistic picture of the sustainability efforts of a firm. This study found an obvious gap in available indices that encompass all dimensions of sustainability. Therefore, this study attempts to identify dimensions of sustainability that should be incorporated in a corporate sustainability index for listed firms of a developing economy.

Literature Review

Sustainability and Sustainable Development

Sustainability is concerned with improving and sustaining a healthy ecological, social and economic system, for sustainable development (Mensah, 2019). The issue of sustainable development has gained huge world urgency. The concept of SD gained worldwide recognition when a formal definition of the term was coined during the World Commission on Environment and Development (WCED) in which the famous Brundtland report identified SD as “meeting the needs of the present without compromising the ability of future generations to meet their own needs” (Brundtland, 1987). A massive consensus among the global community resulted in the declaration of the UN Sustainable Development Goals (SDGs) (UNGA, 2015). SD urges the concerned to improve the standard of living without jeopardizing the integrity of the earth’s environment and natural systems like depletion of forests and water resources (Browning & Rigolon, 2019). The concept of Triple bottom line (TBL) was introduced by Elkington (1998). Triple bottom line (TBL) and sustainability are two related constructs that are used interchangeably in the literature. The main components of TBL are three P’s i.e. profit, people and the planet (Elkington, 1998). This means that the firms should focus their sustainability efforts in the direction of environmental and social as well as the economic aspect.

The SECP is the apex regulator of Pakistan. The SECP in 2002 issued the CCG as the key step in corporate governance improvement in Pakistan (Ullah et al., 2021). Later on the SECP issued the CSR voluntary guidelines in 2013 for promoting Corporate Sustainability practices (CSP). Thereafter the CSR reporting increased among listed firms (Lone et al., 2016). In the same vein the CCG 2012 required the listed firms to report their non-financial information related to sustainability or information that is related to public interest (SECP, 2012). The latest code (SECP, 2019) makes the reporting of sustainability issues mandatory however, the content and format has been left to the firm. The Code makes it voluntary for companies to post their policies related to corporate social responsibility/sustainability/ ESG related matters on the company website. PSX also issued a “Primer on ESG Reporting” for listed firms and has encouraged listed firms to adapt ESG reporting (Pakistan Stock Exchange, 2024). The number of firms issuing sustainability reports are now gradually increasing (Hasan et al., 2022). The lack of a standardized sustainability reporting framework makes the job of rating the sustainability performance difficult as different firms may report only those parameters that they have performed and leave out those in which their efforts are invisible.

Environmental, Social and Economic Sustainability (ESG)

The term ESG was coined in 2004 (Swiss Federal Department of Foreign Affairs, 2004). ESG is used by investors trying to carry out ESG based investing or “responsible investing” (Rau & Yu, 2023). On the other hand CSR is more related to the socially responsible actions of the corporation. There are three dimensions of sustainability are economic sustainability, social sustainability and environmental sustainability (Dyllick & Hockerts, 2002; Samuel et al., 2013). Most of the ESG rating agencies also use these same three dimension to arrive at a rating of ESG score of a firm (Larcker et al., 2022). ESG indicators have gained across the board acceptance with investors (Serban et al., 2022)..

Environmental Sustainability

Pakistan is the sixth most climate threatened country and the devastating effects were evident in the August 2022 floods that submerged one third of the country and wiped out a million homes and causing 1500 casualties. There are more than five million SMEs and hundreds of Large scale manufacturing firms in Pakistan and they cause heavy degradation of environment due to untreated waste, excessive usage of water, excessive use of fossil fuel based energy, hazardous waste etc. The environment aspect cause loss of bio-diversity, degradation of natural systems, pollution of rivers and air that are extremely threatening to the world and future generations (CNN, 2022). Environmental sustainability is defined as: “the environmental dimension of sustainability concerns the organization’s impact on living and non-living natural systems, including land, air, water and ecosystems” (Gray, 1994).

Social Sustainability

Social aspect of sustainability is the pillar of social justice in a firm. It concentrates on the humans involved with the firm. These can be the stakeholders like the internal employees or the external stakeholders. The main focus of social sustainability is on human well-being and benefits like pay package, salary, health care, equal opportunities, gender diversity, gender equality etc. The firm is supposed to look after the comfort and well-being and improve the bonding and good ties with stakeholders (GRI, 2021). Firms are supposed to look after the well-being of society and take concrete steps to improve the welfare of society (Schwartz & Carroll, 2003). Social sustainability concentrates on the welfare of the society (WCED, 1987). According to GRI “the social dimension of sustainability concerns the impacts the organization has on the social systems within which it operates” (GRI, 2013, p. 64).

Economic Sustainability

The main goal of business enterprises is to improve profits, therefore, economic aspect of sustainability is of prime importance to firm and its shareholders. However, economic sustainability seems against unimpeded profiteering as was presented in the shareholder theory (Friedman, 1967). Opposed to this, the stakeholder theory makes it incumbent upon the firm to consider the welfare of the society (Freeman, 2010). It stipulates that firms should look for strategic success by looking at profits on the long-term instead of short-term focus. The stakeholders include the employees as well as the whole society with its economic implications at national and global level. Economic sustainability demands to maintain long market presence while remaining economically feasible, this leads to good financial and suitability performance of the company. The GRI defined economic sustainability as “the organization’s impacts on the economic conditions of its stakeholders, and on economic systems at local, national, and global levels” (Azapagic, 2004).

Circular Economy

The linear economy model takes resources from the environment, converts it to usable product and at the end of life, product is thrown into the environment in the form of waste. As opposed to this, the circular the product are converted to disposable waste after completing their useful life (Gonçalves et al., 2022). However, this traditional system has resulted in creating mountains of undisposed waste that is polluting the streams and oceans as well as in the land. The sustainable method of production called the circular model allows the recovery and reuse of waste material by putting it back into the supply chain. This method is more friendly to the environment (Ghisellini et al., 2016). Implementation of CE based business models can be useful for enhancing sustainability at global level (Yang et al., 2023). Thus CE leads to sustainable development and is seen as a useful strategy to implement the concept of sustainable development (Geissdoerfer et al., 2017).

Several countries are taking an active lead towards the Circular Economy (CE) model through regulatory frameworks. The top among them is China, that has included the CE model in its national economy (Geng et al., 2012). The European Union has also issued legislation that guides the business to follow a circular economy model throughout the product life cycle by recycling, reducing and recovering the waste. (European Environment Agency, 2022). The US has also taken several steps to improve the waste and its harmful environmental effects through policies that are conducive towards the 3R concept. There is a tendency to move beyond the normal waste

management to wider material management system (Heck, 2006). Although the concept of CE gained popularity in the last decade but there is limited research on framework for circularity measurement of the service, product or supply chain (Elia et al., 2017).

Nobre & Tavares (2021) define Circular Economy “an economic system that targets zero waste and pollution throughout materials lifecycles, from environment extraction to industrial transformation, and to final consumers, applying to all involved ecosystems. Upon its lifetime end, materials return to either an industrial process or, in case of a treated organic residual, safely back to the environment as in a natural regenerating cycle. It operates creating value at the macro, meso and micro levels and exploits to the fullest the sustain-ability nested concept. Used energy sources are clean and renewable. Resources use and consumption are efficient. Government agencies and responsible consumers play an active role ensuring correct system long- term operation”. Kirchherr et al. (2017) found 114 definitions of Circular economy and found that most of them consist of three activities i.e. “reduce, reuse and recycle”. Other studies (Jawahir & Bradley, 2016; Reike et al., 2023) have recommended 6R typology comprising of “Reduce, Reuse, Recycle, Reproduce, Redesign, Recover”.

A explanation of each of the terms adapted from Barnabè & Nazir (2022) is given below:

Table 1: 6Rs of Circular Economy

S#	Typology of R-process	Description
1.	Reduce	Focused on the initial phases of product life cycle where efforts are put in to reduce utilization of resources as well as reduced waste generation and emissions (Jawahir & Bradley, 2016) (Reike et al., 2018)
2.	Reuse	It means the reuse of a product several times, as a whole or its parts after completion of its first cycle use. (Kirchherr et al., 2017)
3.	Recycle	Ability to convert materials that are waste into new materials or products. (Kirchherr et al., 2017) (Reike et al., 2018)
4.	Reproduce/ Remanufacture	It involves reprocessing products that have been already used, and bringing them back to their original functionality. (Jawahir & Bradley, 2016) (EMF, 2015)
5.	Redesign/ Repurpose	It includes updating product design for next generation of products by utilizing materials and products from previous generation of products. (Morse, 2015) (Morseletto, 2020)
6.	Recover	Process by which products at the end of their utilization are collected, disassembled and cleaned to be used again in new product life cycles.(C. Gray & Charter, 2007)

Source: (Barnabè & Nazir, 2022)

The UN Sustainable Development Goals

SDGs is a highly researched area with most of the related articles categorized in the area of sustainability (Yamaguchi et al., 2023). The business entities now feel obliged to act in a responsible attitude towards its stakeholders as well the environment after the UN SDGs found worldwide acceptance in 2015. Although the SDGs are measured at a national level, but the entities contributing to the damage to the environment are the corporations and industries of that particular nation. Corporate entities play a major role in introducing measures to arrest the trend of environmental degradation and act responsibly towards its stakeholders and thus contribute in improving the sustainable development at the national level (Soysa et al., 2023). Pakistan occupies an unenviable world ranking of 137 among 193 countries with a score of 57 as of 29 July 2024 (Sachs et al., 2021). There are 17 goals with 169 targets in the UN SDGs (UNGA, 2015). The list of SDGs, adapted from Yamaguchi et al. (2023) is given in Table 2 below:

Table 2: UN SDGs

Goal	Goal Name	Targets	Indicators
1	No poverty	7	13
2	No hunger	8	13
3	Good health	43	28
4	Quality education	10	12
5	Gender equality	9	14
6	Clean water & sanitation	8	11
7	Renewable energy	5	6
8	Good jobs and economic growth	12	16
9	Innovation and infrastructure	8	12
10	Reduced inequalities	10	14
11	Sustainable cities & communities	10	15
12	Responsible consumption	11	13
13	Climate action	5	8
14	Life below water	10	10
15	Life on land	12	14
16	Peace and justice	12	14
17	Partnerships for goals	16	24

Source: <https://sdgs.un.org/goals>

Corporate Sustainability Indices

Several globally adapted CSI are Dow Jones Sustainability Index (DJSI) (Index, 2013), Task Force on Climate-related Financial Disclosures (TCFD), Global Reporting Initiative (GRI) (GRI, 2021)(GRI, 2021), Sustainability Accounting Standards Board (SASB), Carbon Disclosure Project (CDP), ISO 14000 Environment Management Systemsⁱⁱ, ISO 26000 Social Responsibility Standardⁱⁱⁱ, and Integrated Reporting Framework^{iv}(IR), Organization for Economic Cooperation and Development (OECD) guidelines for reporting their sustainability performance. These reporting standards and initiatives were issued to ameliorate the sustainability reporting issues (Goyal & Rahman, 2014).

Measurement of Corporate Sustainability through Index

An index is a quantitative measure that provides a numeric indicator of a firm's sustainability performance in the area of interest. The sustainability index consists of carefully selected items that give a holistic picture of the sustainability performance (Marston & Shrivs, 1991; Zahid et al., 2019). A disclosure index is extensively utilized for measurement of the extent of sustainability performance (Madi, 2012). An index has several benefits and can be utilized to: (a) gauge the sustainability performance of a firm on a temporal level, (b) compare firms' performance in sustainability arena, (c) enable regulatory bodies to study the compliance and effectiveness of sustainability directives, and (d) the index can be utilized by researchers to find the impact of sustainability practices on firm performance. The financial performance can be characterized by different measures since there is no consensus on the best parameters (Dalton & Dalton, 2011). However, three methods are widely used for measuring financial performance as stipulated by Orlitzky et al. (2003): accounting measures like the Return on Sales(ROS), Return on Equity (ROE), and Return on Assets (ROA) (Jewell & Mankin, 2011); market measures like cumulative abnormal return (CAR) and Tobin's Q and perceptual measures. More than two types of measures can also be used to measure the relationship between CSP and CFP (Garcia-Castro et al., 2010; Margolis & Walsh, 2003; Rodgers et al., 2013))

Theoretical Framework

The stakeholder theory (Donaldson and Preston, 1995; Freeman, 1984, 2010) is extensively employed for drawing conceptual frameworks for ethical responsibilities of business (Gupta et al., 2020; Wijnberg, 2000). Donaldson & Preston (1995) has three fundamental elements i.e. instrumental, normative, and descriptive. Stakeholder is any individual or group who can affect or be affected by a business entity or its purpose or its objectives (Freeman, 1984). The normative aspect is the ethical element of the stakeholder's theory and gives paramount importance to the interest of the stakeholders irrespective of the firm's profit. The concept of introducing sustainability within a firm's operation aligns itself with the stakeholder theory. By being sustainable, the firm is taking care of the long term benefit of the stakeholders on the long run. Descriptive aspects of stakeholder theory deals with stakeholder salience, i.e. the relative importance of each stakeholder group for the company. Each stakeholder group has its own interests that can exert specific influence over the firm's operations and the company should find a balanced method to balance the interests of each stakeholder group. The instrumental approach uses specific data to find the most appropriate method for management of stakeholders for achieving the targets of the company. This approach implies that a firm gains competitive advantage by aligning itself to stakeholder satisfaction and this in turn leads to improved financial gains. Any framework for reporting sustainability practices should be based on the Stakeholder theory. Popular international sustainability reporting standards, like GRI and SASB standards are based on the Stakeholder's theory. Consequently, any index that rates sustainability performance should gauge all sustainability paradigms. This study suggests that ESG, SDGs as well as the Circular economy should be integral parts of a sustainability reporting index.

Methodology

This study used the narrative review methodology to answer the research objectives. The process consists of four major steps that are: (a) formulation of keywords, (b) search of articles from popular databases based on keywords, (c) Title and abstract identification (d) Full text assessment (e) exclusion of irrelevant or duplicate articles, and (f) Data analysis and synthesis.

Using the keywords Index, indicators, indices, circular economy and "sustainable development goals" and their synonyms, the following search strings were formulated: (a) (Index OR Indices OR Indicators) AND "circular economy" AND ("Sustainable Development Goals" OR SDGs), (b) (Index OR Indices OR Indicators) AND "circular economy" AND ("environmental, social and governance" OR ESG), (c) (Index OR Indices OR Indicators) AND "Circular economy" AND ("Sustainable Development Goals" OR SDGs) AND ("Environmental, social and governance" OR ESG). For ESG, the time duration was 2005 onwards whereas for SDGs, time interval was 2015 onwards.

Dimensions database was selected since it provides several facilities like: (a) save search results; (b) export search results in .csv, bibtex, .ris format; (c) filter search results based on publication year, type of access (closed, all open access etc.), publication type (e.g. article, book chapter, proceedings, book, seminar etc.); and (d) limiting search to title or full data. Moreover, there is adequate evidence in literature about the effectiveness of Dimensions as a research database (Singh et al., 2021; Thelwall, 2018). 370 articles were downloaded based on the search strings and exported to citation manager as well as MS Excel. Subsequently duplicates were identified and removed and papers without a DOI were also removed. The title and abstract of the downloaded articles were checked and irrelevant as well as duplicate articles were removed. Articles that specifically focused on development of index for corporate sustainability paradigms including ESG, SDGs and CE were finally selected (Mensah, 2019).

Results

Indices developed by researchers in academia fall into several categories: (a) indices that are based on environmental, social, and economic (governance) aspect of sustainability, (b) indices that measure the adaption of circular economy / circularity of a firm, (c) indices that measure the adaption of SDGs, and (d) indices that measure a combination of the above three sustainability paradigms in a single measure. The examples of these are given in Table 1. Most of the indices are based on environmental, social and economic aspects of

sustainability; in this case only few studies have measured the impact of CSP on CFP using the index developed during the study. Indices are also available that measure circularity of a manufacturing process.

Table 3: Corporate Sustainability Indices

Objective	Measured dimension(s)	Impact of CSP on CFP	Reference
To develop a sustainability performance index to measure and evaluate the sustainability performance of industries	ESG	Not assessed	(Satish Pandian et al., 2013) (M. P. Singh et al., 2021) (Garg, 2017) (Emma Pravitasari et al., 2018) (Beekaroo et al., 2019) (Papoutsis & Sodhi, 2020) (Bahurmoz, 2019) (Zhou et al., 2012) (Panait et al., 2022) (Younas et al., 2021) (Dobrovolskienė & Tamošiūnienė, 2016) (Molla & Ibrahim, 2019) (Bonilla-Priego et al., 2014) (Zafar & Sulaiman, 2020) (Ghazali & Zahid, 2015) (Nair & Nayar, 2020) (Molla & Ibrahim, 2019) (Ur Rahman et al., 2020)
To develop a sustainability performance index and evaluate the impact of CSP on CFP	ESG	Assessed	(Rahman et al., 2023) (Jamil & Siddiqui, 2020) (Jan et al., 2021) (Zahid et al., 2023) (Jallo & Mus, 2024) (Tsatsaronis et al., 2024)
To develop an index to measure circular economy strategies	CE	Not assessed	(Elia et al., 2017) (Geng et al., 2012) (Pauliuk, 2018)
To develop a sustainable circular index for manufacturing companies	ESG and CE	Not assessed	(Azevedo et al., 2017)
Measuring the impact of circular economy performance on financial performance	ESG and CE	Assessed	(Esposito et al., 2024)
To develop a sustainability performance index based on ESG and SDGS	ESG and SDGS	Not assessed	(Soysa et al., 2023)

Conclusions and Future Recommendations

A number of corporate sustainability indices were reviewed in this study and the summary presented in Table 1 shows that most of the indices were developed around the environmental, social and governance aspects of sustainability. Some of studies used the index to further examine the effect of CSP on CFP; these regression studies also used mediators in some instances. Some indices have been typically developed for measuring

circularity of a process. Indices that measure ESG as well as SDGs are also available. None of the indices measures ESG, SDG and CE in a single index. Therefore indices that include ESG, SDGs as well as CE may be designed in future research. This study has implications as it can be utilized by regulatory bodies to design an index for the listed firms.

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