

Sustainable Supplier Evaluation

Subjects: Industrial Relations & Labor

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The disclosure of environmental, social, and governance (ESG) tasks, seen as companies' performance of sustainability, has gradually become a necessity for listed enterprises.

Keywords: ESG ; sustainable supplier ; evaluation criteria

1. Introduction

In the current global economic system, corporate sustainability has emerged as a central issue, especially against the backdrop of the increasing global focus on environmental, social, and governance (ESG) standards ^[1]. Numerous countries and regions have intensified regulatory and disclosure requirements for publicly listed companies regarding ESG, a trend that reflects the heightened emphasis on sustainable development in global markets and underscores the pivotal role of ESG standards in commercial operations ^[2].

As societal expectations for sustainability grow, businesses have shifted their supply chain management focus from solely cost and efficiency to increasingly prioritizing sustainable performance ^[3]. Extensive research, including findings by Yu ^[4], has demonstrated that robust ESG performance can enhance corporate value. The global attention to ESG issues presents new challenges for corporate supply chain management.

In this context, companies are paying greater attention to the sustainability performance of all parties within their supply chain, with the evaluation of suppliers' sustainability being particularly critical ^[5]. Sustainable supplier evaluation is an essential component of corporate sustainable development and ESG transformation, impacting enterprises' supplier selection behaviors ^[6]. This is especially true for manufacturing companies, where the sustainability of supplied products directly determines the sustainable performance of the final manufactured goods ^[7].

Traditional supplier evaluation typically focuses on economic dimensions such as cost, quality, and delivery time, with scholars like Pedroso Carolina Belotti incorporating the environmental and social dimensions of sustainability issues into evaluation criteria based on the "Triple Bottom Line" theory ^[8]. In the current era, where ESG factors are increasingly prominent, integrating these new sustainability capability requirements into supplier evaluation criteria is not only a compliance with regulatory requirements but also a practice that enhances corporate reputation ^[9], customer satisfaction ^[10], and investor relations ^[11].

2. Sustainable Supplier Evaluation

In the research on sustainability, Elkington introduced the "Triple Bottom Line (TBL)" theory, encompassing economic, environmental, and society aspects within corporate operations research. This theory forms the basis for building a sustainable supplier evaluation system ^[12].

Early studies in related fields primarily focused on environmental aspects when evaluating suppliers, giving rise to the concept of "green suppliers". Noci conducted a pioneering study in 1997, identifying four key evaluation priorities: "Green" competencies, current environmental efficiency, the supplier's "green" image, and the net life cycle cost, supported by 13 secondary indicators ^[13]. Subsequent research has expanded the criteria, considering pollution output ^[14], resource consumption ^[14], ecological design ^{[14][15]}, environmental management systems ^{[14][15]}, green products ^[15], and green warehousing ^[15], green transportation ^[15], green technology ^[15], and other primary items, and further refining 21 secondary indicators. Additionally, taking into account customer needs, green supplier selection evaluated factors related to financial stability, environmental management systems, waste treatment plans, management commitments, quality control systems, manufacturing facilities, and reverse logistics, totaling eight key aspects ^[16].

As sustainability has gained attention, scholars have explored suppliers' social performance alongside environmental concerns. Zimmer highlighted ten key aspects within the TBL framework studied by previous scholars ^[17]. However, some researchers noted the need for more in-depth discussions on social sustainability evaluation, compared to the environmental dimension ^[18]. Thus, some scholars employed the best–worst method to optimize the 16 social indicators to 8 based on prior research ^[19]. Following researchers further discussed the application of the criteria above in supplier selection. At the same time, Ghadimi and others utilized the nominal group method to propose four environmental criteria (environmental performance, green image, pollution control, and green competencies) and two social criteria (health and safety and employment practices) ^[20]. Some scholars combined a literature analysis and the Delphi method to expand on Ghadimi's work, introducing three additional social criteria (information sharing, stakeholder relations, and social activities) ^[21]. Furthermore, studies delved into specific industries like automobile manufacturing ^[22], petrochemicals ^[23], clothing and textiles ^[24], and various scenarios such as supplier switching ^[25] and multi-level global procurement ^[26].

Since the ESG concept was introduced later than TBL, there is a relative lack of maturity in related research. As a result, few papers integrate ESG matters into sustainable supplier evaluation nowadays. For instance, Dai and Tang examined supply chain issues emerging in the post-pandemic era, highlighting three key challenges that underscore the need to incorporate supply chain activities into ESG management ^[27]. Zeng combined ESG and financial indicators to assess green supply chain performance, focusing on 10 indicators from profitability, environmental performance, and operational performance 3 aspects ^[28], but did not encompass content of social aspects and governance.

3. ESG Framework and Regulatory Requirements

The concept of ESG was initially proposed by the United Nations Global Compact in the 2004 “Who Cares Wins” report ^[29]. Its goal was to provide guidance on integrating ESG factors into asset management and securities transactions. Since then, various entities, including governments, non-governmental organizations, and enterprises, have increasingly focused on ESG-related matters. ESG has emerged as a pivotal indicator for assessing economic sustainability ^[30].

Recent scholarly achievements have encompassed several areas, including the following: (1) exploring the relationship between ESG and corporate performance ^{[31][32][33]}, (2) investigating the regulatory impact of ESG investors on financial performance ^[11], (3) analyzing the connection between ESG investment risk and returns ^[34], and (4) assessing the influence of ESG ratings on measuring corporate sustainable development performance ^[35]. However, discussions about ESG regulatory requirements remain limited. In a comparative analysis of ESG disclosure systems in developed and developing countries, researchers discovered that adopting mandatory norms alone does not significantly improve ESG scores. Instead, practical measures, such as sustainable development reports and carbon emission commitments, contribute to better ESG performance ^[36]. Bruno studied ESG policies in the European banking industry ^[37]. Alamilos found that the EU has played a prominent role in shaping ESG regulations, resulting in the “Brussels Effect”, which impacts exposure, revenue, trade, and investment ^[38].

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