



# Indian textile suppliers' sustainability evaluation using the grey approach

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## ABSTRACT

Textile supply chains consist of multinational garment retailers (customers), garment manufacturers (suppliers), and ancillary suppliers (suppliers to manufacturers). This paper evaluates suppliers' within the Indian textile and clothing industry (both garment manufacturers and ancillary suppliers) using sustainability criteria. Examining a sample of sixty-three suppliers and six sustainability criteria (i.e. discrimination, abuse of human right, child labor, long working hours, unfair competition, and pollution), we categorize suppliers into the three categories of 'good performer', moderate performer', and 'performance not up to expectation'. Since all the criteria are potentially subjective, we have employed the grey approach for analysis. The results indicate that the criterion of long working hours is a critical one for both categories of suppliers; in the case of garment manufacturers, we found that pollution and unfair competition were the most important criteria. In addition, employing child labor was found to be a critical criterion in the case of ancillary suppliers.

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## 1. Introduction

The profiles and accountability of today's major corporations are under increasing scrutiny by communities in the interests of developing sustainable industries. Sustainability is generally understood as a development approach that meets the needs of the present generation without compromising the ability of future generations to meet their own needs (WCED, 1987). Corporate sustainability is the capacity of an enterprise to maintain economic prosperity in the context of environmental responsibility and social stewardship (Sahay, 2004), and sustainability reporting is the practice of measuring, disclosing, and being accountable to internal and external stakeholders for organizational performance towards the goal of sustainable development. To date, several European countries, including the Netherlands and Germany, have made sustainability reporting mandatory. Generally, sustainability is defined in terms of aspects such as economic, product responsibility, human rights, labor practices and decent work, society, and environment (GRI, 2010), which are, in turn, expressed through various criteria. A list of the aspects and their corresponding criteria are shown in Table 1.

Many leading multinational firms in countries where sustainability reporting is mandatory outsource the bulk of their products

from developing nations where there is no essential requirement to adhere to the various aspects of sustainable development. The importance of sustainability issues in business can be understood through the recent experiences of three multinational companies: Nike, Satyam Computer Services, and Coca-Cola. Since 2008, Nike shoes and sports apparel have received worldwide condemnation for its workforce-related malpractice in Indonesia (<http://www.oxfam.org.au/explore/workers-rights/nike>). In 2009, the founder and the members of senior management at Satyam Computer Services (India) were found guilty of corporate fraud, having manipulated the firm's accounts for more than seven years to attract businesses unfairly and avoid vulnerability. This led to the firm's involvement in an US\$1.47 billion fraud case (Rajagopalan and Zhang, 2009). Similarly, in 2005, Coca-Cola, one of the world's largest multinational beverage companies, was on the brink of closing down its operations at several new plants in India for non-compliance on environmental issues (Burnett and Welford, 2007).

These three examples demonstrate that though there are many aspects of industry sustainability, there are some that are critical; these include workforce practices, social issues such as corruption, and environmental ones such as pollution. The workforce aspect includes consideration of criteria such as discrimination, abuse of human rights, child labor, and long working hours (O'Rourke, 2003). In this study, we employ six sustainability criteria to evaluate suppliers in Indian textile industry: discrimination, abuse of human rights, child labor, long working hours, corruption, and pollution.

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The rest of the paper is organized as follows: Section 2 provides a brief overview of the Indian textile industry. Section 3 reviews the relevant literature for conventional and sustainable supplier evaluation criteria and methods. We describe the research methodology adopted in this in Section 4. Section 5 discusses the application of the grey approach for evaluating suppliers based on the selected sustainable criteria. We conclude the paper with a discussion on the findings in Section 6, and limitations and future research in Section 7.

## 2. An overview of the Indian textile industry

The Indian textile and clothing industry has one of the longest and most fragmented supply chains in the world, with the existence of many intermediaries between the producer and the final customer (NCAER, 2009). The presence of intermediaries induces longer lead times and higher costs to deliver. The textile supply chain is shown in Fig. 1.

While the industry is fragmented and dominated by small firms, it continues to play an important role in the Indian national economy. In the 2007–2008 fiscal year, it employed 3.7% of the total national workforce and earned 13.8% of total national export earnings (NCAER, 2009). The textile and clothing industry is

**Table 1**  
Sustainability aspects and criteria.  
Source: GRI, 2010.

Aspects	Criteria
Economic	Economic performance Market presence Indirect economic impacts
Product responsibility	Customer health and safety  Product and service labeling Marketing Communications Customer privacy Compliance
Human right	Non-discrimination child labor freedom of forced and compulsory labor association and collective bargaining investment and procurement practices
Labor Practices & Decent Work	Discrimination in employment (age/gender)  Labor/management relations Occupational health and safety Training and education Diversity and equal opportunity
Society/unfair competition	Community  Corruption Public policy Anti-competitive behavior Compliance
Environment	Pollution (emissions, effluents, and waste) Materials Energy Water Biodiversity Compliance Transport Products and services

broadly divided into output categories: ginning, spinning, weaving and knitting, dyeing and processing, and garments. The percentage of firms under each production category is shown in Table 2. The vast majority of firms belong to the categories of ‘Garments Production’ and ‘Other Fiber related firms’.

According to a recent report, the Indian textile and clothing industry faces two major challenges in the forms of power shortages and skill shortages (NCAER, 2009). Due to the inadequacy of power supplies from the State Electricity Distribution companies, most textile firms rely on their own captive power plants. Substantial financial investment is required to secure an alternative source of power, and this is generally beyond the budgets of most small firms; smaller operations are, therefore, less efficient and competitive.

Currently, there is a significant gap between the availability of a skilled workforce and the requirements of the industry, particularly in the weaving, dyeing and processing, and garment production segments. In order to be more competitive, the Indian textile and clothing industry needs to secure adequate power supplies, minimize the skill gap, and adopt supply chain best practices.

## 3. Literature review

Supplier evaluation is a management decision-making process that addresses how organizations select strategic suppliers to enhance their competitive advantage. Earlier research used conventional criteria, such as price and delivery time, to evaluate suppliers. Because of the greater importance of sustainability in the current global business environment, increasing numbers of organizations are using criteria related to sustainability issues for the supplier evaluation process. In Section 3.1, we review literature regarding supplier evaluation involving conventional criteria, and Section 3.2 follows with a review of sustainability criteria literature.

### 3.1. Conventional criteria for supplier evaluation

Scholars in the field have identified a number of conventional criteria for supplier evaluation. The theoretical basis for the construction of supplier evaluations started with transaction cost economics and a resource-based view of the firm. The underlying premise of transaction cost economics is that a firm’s primary focus is on profit maximization. The criterion of ‘price’ thus received more emphasis than other factors such as quality, delivery, or service. The research considering conventional criteria shows the criterion of ‘price’ as the prime concern for industries (Weber, 1990; Weber and current, 1993; Byrne, 1998; Gupta and Krishnan, 1999; Simpson et al., 2002).

Several studies have attempted to identify the underlying dimensions of quality management and relate them to supplier

**Table 2**  
Percentage of firms involved in various production processes.

Production type	Ginning	Spinning	Weaving	Dyeing and processing	Garments	Other fiber units
Percentage of firms	0.12	1.68	12.54	15.64	34.89	35.12



**Fig. 1.** Textile supply chain.

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