

## Apparel Supply Chain Transparency: Where is the Weakness? A Case Study on VF Corporation

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### Background

With the public's increasing demand, fashion companies are making more significant efforts to improve their apparel supply chains' transparency, i.e., mapping where the product is made and knowing suppliers' compliance with social and environmental regulations (Fung, Choi, & Liu, 2020). Researchers have explored the impact of supply chain transparency on consumers' purchasing behaviors or fashion companies' business performance (Sodhi & Tang, 2020; Bhaduri & Copeland, 2021). However, the most vulnerable spots for supply chain transparency remain primarily unknown (Ma, Lee, & Goerlitz, 2016). This study aims to identify the critical weakness of apparel supply chain transparency based on a case study of VF Corporation (VF), one of the most historical and largest U.S. apparel companies operating globally (VF, 2021). Unlike existing literature that focused on finished garments only, we evaluated the transparency of VF Corporation's entire apparel supply chain in 2020, which included 327 suppliers making finished garments or textile intermediaries of all kinds (Modi & Zhao, 2020; VF, 2021). The findings of this study will fulfill a critical research gap and significantly enhance our understanding of the nature of today's apparel supply chain and the opportunities and challenges to improve its transparency.

### Literature review

Existing studies suggest that several factors may affect the apparel supply chain's transparency. First, as the apparel production process is lengthy and fragmented, fashion companies typically map their tier 1 & tier 2 suppliers (i.e., garment or fabric manufacturers), but not tier 3 & tier 4 suppliers (i.e., yarn or fiber producers) (Lu, 2020). This suggests that supply chain transparency could worsen toward the supply chain's upper side (H1). Second, studies indicate that suppliers in different segments of the apparel supply chain may have their respective transparency priorities (Desore & Narula, 2018; Cai & Choi, 2020). In general, textile mills may prioritize environmental and sustainability-related transparency, whereas garment factories may focus more on social compliance (H2). Third, because of stricter government regulations and more effective enforcement, vendors located in developed countries could perform better than those from developing ones regarding supply chain transparency (Nayak, Akbari, & Far, 2019) (H3).

### Methods

Given the nature of VF suppliers' data, we used the MANOVA technique to test the hypotheses (Huberty & Olejnik, 2006; VF, 2021). The dependent variables include three items that measure a supplier's transparency performance, namely:

1) *Information*: if VF indicates that a supplier provided its environmental or social compliance information =1; if VF indicates that the supplier was unresponsive to VF's request for environmental or social compliance information=0 (VF, 2021)

2) *Environment*: if a vendor received any environmental compliance related certification =1; otherwise =0

3) *Social*: if a vendor received any social compliance related certification =1; otherwise =0  
In correspondence with the hypothesis, the independent variables include *Tier* (i.e., garment factory=1; fabric mill or accessories supplier=2; yarn mill=3; fiber supplier=4) and *Country* (i.e., if a vendor located in a developed country =1; otherwise =0) (UNCTAD, 2021).

### Results and Discussions

**First**, MANOVA's main effect test results suggest that VF suppliers located in different segments of the apparel supply chain had different transparency performance overall (i.e., Pillai's Trace and Wilks' Lambda F-test  $p < 0.01$  for variable *Tier*). **Second**, MANOVA's between-subject test and contrast analysis indicate that while more than 92% of tier 1 & 2 suppliers shared their environmental or social compliance information with VF (i.e., variable *Information*), less than 60% of VF's tier 3 & 4 suppliers did so. Such a difference in transparency performance was also statistically significant ( $p < 0.01$ ). **Third**, the between-subject test and contrast analysis show that a higher percentage of VF's tier 2 & 3 suppliers (i.e., mills making fabrics, yarns, or accessories) received environmental compliance-related certification (i.e., variable *Environment*) than tier 1 suppliers (i.e., garment factories). Meanwhile, VF's tier 1 suppliers were more active in pursuing social compliance-related certification (i.e., variable *Social*) than suppliers in other levels ( $p < 0.01$ ). However, no evidence suggests that whether from a developed or developing country (i.e., variable *Country*) will affect a vendor's transparency performance statistically (i.e., Pillai's Trace and Wilks' Lambda F-test  $p > 0.05$ ).

### Implications and future research agenda

**First**, the results show that tier 3 & 4 suppliers (i.e., mills making yarns and fibers) remain a notable weakness of VF's supply chain transparency. Notably, despite the significant efforts to know their garment factories (i.e., tier 1 suppliers), fashion companies like VF still have limited knowledge about vendors upper in the supply chain. VF doesn't have much leverage to request environmental and social compliance-related information from these vendors, either. A lack of sufficient transparency information of tier 3 & 4 suppliers explains why fashion companies find it challenging to respond to the rising concerns about imported apparel contain cotton made by forced labor (Lu, 2020). **Second**, the results suggest that vendors at different supply chain levels have their respective transparency priorities. However, it is debatable whether tier 1 & 2 suppliers should also care about environmental and sustainability-related compliance, and tier 3 & 4 suppliers should be more transparent about their social compliance record. The growing concerns about forced labor involved in cotton production (i.e., tier 4 suppliers) again set a good example. **Additionally**, different from the public perception and previous studies, the findings call for equal treatment of suppliers from developed and developing countries when vetting their environmental and social compliance-related transparency (Sodhi & Tang, 2019; Akbar & Ahsan, 2020).

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