



## How to Bring Transparency to the Apparel Supply Chain: A Future Roadmap

Gurinder Kaur, Thomas Jefferson University, USA  
Amrut Sadachar, Auburn University, USA

**Keywords:** supply chain; transparency; sustainability

**Introduction:** Typically, the global apparel supply chain functions differently than other supply chains in which products are sourced and delivered according to a variety of comprehensive laws and regulations (Bruce, Daly, & Towers, 2004). The apparel sector's global supply chain is characterized by many players from all parts of the world; many raw materials and processes that happen throughout the supply chain; and multiple logistics intermediaries that transport and distribute the products (Bruce, Daly, & Towers, 2004).

The apparel supply chain is controlled primarily by retailers despite the lack of their own manufacturing facilities. Most retailers buy ready-to-sell products from manufacturers/vendors and sell it to customers (Thomassey, 2010). A macro-scale analysis of the supply chain shows that each actor in the supply chain receives raw material as inputs from the last actor, processes them, and then produces the final selling product (Beamon, 1998). Each actor performs many processes until it reaches the consumer. As a result, each actor produces significant amounts of data and information. Information is critical to supply chain management, so each actor has a responsibility to protect, manage, and share the flow of information to make it transparent (Fu, Shu, & Liu, 2018).

**Problem Statement:** Supply chain transparency is considered a key component of social and environmental sustainability (Gupta & Mason, 2014). Despite recent improvements in supply chain management, issues remain, including product tampering, low traceability, delays, poor on-time information sharing, and above all, a lack of transparency in the process due to opaque and distrustful networks. Thus, it is difficult to determine when, where, and how apparels were originally produced, particularly since most apparel companies move their production facilities offshore to other developing nations operated by local apparel manufacturers, resulting in a lack of transparency (Thakur & Hurburgh, 2009). Pressure on the apparel industry to be more transparent is increasing from consumer and civil society groups alike. Transparent and traceable supply chains for the apparel industry will enable consumers to make better purchasing decisions and support ethical businesses. For the multiple actors in the apparel supply chain, available actual-time information and traceability will help foster healthy business relationships, increase efficiency, and reduce product recalls, counterfeits, and unethical labor. While retailers have been under pressure to share information about their supply chain practices, many companies, including large fast-fashion companies have been inconsistent in implementing transparency policies. Low transparency has been attributed to the lack of laws enforcing transparency and holding brands accountable.

**Purpose:** Currently there is no static image of supply chain transparency mainly because there is no global governance that enforces the law or establishes a framework to define a transparent global apparel supply chain. Consequently, it is challenging to hold brands legally responsible for practices along their supply chain. Further, dimensions that can contribute to a transparent supply chain are researched separately and have not been outlined under a single concept. Therefore, the *purpose* of the present study was to suggest a comprehensive framework that captures multiple dimensions contributing to a transparent apparel supply chain.

**Literature review:** Here, transparency is conceptualized to mean the disclosure of sustainability information to the public (Marshall, McCarthy, McGrath, & Claudy, 2015). Certain sectors have mandated the implementation of traceability over the years as a means of protecting and securing products. For example, the food and pharmacy sectors rely heavily on government regulations for implementing traceability (Tian, 2016). While traceability has not been a priority of the apparel industry previously, it has recently emerged as a priority (Lam & Postle, 2006). Studies have assessed the effects of transparency on inventory management (Angulo, Nachtmann, & Waller, 2004), optimization of supply chains (Hall & Saygin, 2012) and organizational effectiveness (Lotfi, 2013). To date, no formal traceability regulation exists for the apparel industry, which hinders implementation (Goswami, 2014). However, it is worth mentioning relevant voluntary initiatives, such as The Italian Union of Chambers of Commerce, that encourage the use of traceability systems in supply chains for various sectors, including apparels (Gobbi & Massa, 2015). The Fashion Transparency Index (FTI) by Fashion Revolution grades brands and retailers based on transparency. Furthermore, traceability is becoming increasingly important to supply chain actors (Kraisintu & Zhang, 2011). As an example, finished product quality is determined by the authenticity and origin of raw materials, as well as the importance of traceability to overcome the fierce competition.

**Findings:** Through synthesizing extant and relevant literature, we examined and defined various aspects that can make a supply chain transparent, such as a brand's *policies/commitment towards environmental sustainability* (e.g., water pollution and wastage, green gas emission, deforestation, and use of hazardous chemicals); *policies and commitment towards social sustainability* (e.g., child labor, forced labor, minimum wages, working environment, right of union); *traceability of supply chain using technology* (e.g., RFID and Blockchain); *internal policies for holding accountability regarding sustainability and global organization to monitor and certify the brands/retailers* (Figure 1). We also identified various challenges that brands face while building a transparent supply chain and offer solutions to make apparel supply chain transparent.

**Conclusion:** We found two key limitations to defining transparency in the supply chain. First, supply chain transparency has an inconsistent definition among various scholars, and they may focus on just one aspect of it. Thus, supply chain transparency is often framed in a limited and sometimes dualistic manner, with companies being categorized as either transparent or

nontransparent. This framing does not acknowledge the fact that most companies display a variety of transparency outcomes simultaneously, regardless of whether they have the same or different transparency dimensions. Second, while many theoretical studies have examined supply chain transparency, there have been few empirical studies on companies' practical efforts to be transparent. Thus, a need exists for more empirical studies on supply chain transparency. Based on our findings, we suggest a holistic framework that captures all relevant dimensions of the apparel supply chain as below.



**Figure 1.** A Future Roadmap to Bring Transparency to the Apparel Supply Chain

## References

- Angulo, A., Nachtmann, H., & Waller, M. A. (2004). Supply chain information sharing in a vendor managed inventory partnership. *J. Bus. Logist.*, 25, 101-120. doi: <https://doi.org/10.1002/j.2158-1592.2004.tb00171.x>
- Beamon, B. (1998). Supply chain design and analysis:: Models and methods. *Int. J. Prod. Econ.*, 55(3), 281-294. doi:[https://doi.org/10.1016/S0925-5273\(98\)00079-6](https://doi.org/10.1016/S0925-5273(98)00079-6)
- Bruce, M., Daly, L., & Towers, N. (2004). Lean or agile: a solution for supply chain management in the textiles and clothing industry? *Int. J. Oper. Prod. Manag.*, 24(2), 151-170. doi:<https://doi.org/10.1108/01443570410514867>
- Fu, B., Shu, Z., & Liu, X. (2018). Blockchain Enhanced Emission Trading Framework in Fashion Apparel Manufacturing Industry. *Sustainability*, 10(4), 1105. doi:<https://doi.org/10.3390/su10041105>
- Gobbi, L., & Massa, I. (2015). Supply chain management in textile sector: the case of the Italian T-fashion traceability system. *Int. J. Environ. Health*, 7(4), 359-370. doi:<https://doi.org/10.1504/IJENVH.2015.077133>
- Goswami, S. (2014). Traceability to farm & factory, country of manufacturing, and apparel purchase scenario. *Master's Thesis, University of Missouri, Columbia, MO, USA.*
- Gupta, A., & Mason, M. (Eds.). (2014). *Transparency in Global Environmental Governance: Critical Perspectives*. The MIT Press. doi:<https://www.jstor.org/stable/j.ctt7ztf0q>

- Hall, D. C., & Saygin, C. (2012). Impact of information sharing on supply chain performance. *Int. J. Adv. Manuf. Technol.*, 58, 397–409. doi:<https://doi.org/10.1007/s00170-011-3389-0>
- Kraisintu, K., & Zhang, T. (2011). *The role of traceability in sustainable supply chain management*.
- Lam, J. K., & Postle, R. (2006). Textile and apparel supply chain management in Hong Kong. *IJCST*, 18(4).
- Lotfi, Z. e. (2013). Information Sharing in Supply Chain Management. *Procedia Technol.*, 11, 298-304. doi:<https://doi.org/10.1016/j.protcy.2013.12.194>
- Marshall, D., McCarthy, L., McGrath, P., & Claudy, M. (2015). Going above and beyond: How sustainability culture and entrepreneurial orientation drive social sustainability supply chain practice adoption. *Supply Chain Manag.*, 20, 434–454.
- Thakur, M., & Hurburgh, C. (2009). Framework for implementing traceability system in the bulk grain supply chain. *J. Food Eng.*, 95(4), 617-626. doi:<https://doi.org/10.1016/j.jfoodeng.2009.06.028>
- Thomassey, S. (2010). Sales forecasts in clothing industry: The key success factor of the supply chain management. *Int. J. Prod. Econ.*, 128(2), 470-483. doi:<https://doi.org/10.1016/j.ijpe.2010.07.018>
- Tian, F. (2016). An agri-food supply chain traceability system for China based on RFID & blockchain technology. *13th International Conference on Service Systems and Service Management (ICSSSM)*, (pp. 1-6). Kunming. doi:10.1109/ICSSSM.2016.7538424