

Building Transparent Supply Chains through Digital Tracing

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Abstract : In today's world, particularly with COVID-19 a constant worldwide threat, organizations need greater visibility over their supply chains more than ever before, in order to find areas for improvement and greater efficiency, reduce the chances of disruption and stay competitive. The concept of supply chain mapping is one where every process and route is mapped in detail between each vendor and supplier. The simplest method of mapping involves sourcing publicly available data including news and financial information concerning relationships between suppliers. An additional layer of information would be disclosed by large, direct suppliers about their production and logistics sites. While this method has the advantage of not requiring any input from suppliers, it also doesn't allow for much transparency beyond the first supplier tier and may generate irrelevant data—noise—that must be filtered out to find the actionable data. The primary goal of this research is to build data maps of supply chains by focusing on a layered approach. Using these maps, the secondary goal is to address the question as to whether the supply chain is re-engineered to make improvements, for example, to lower the carbon footprint. Using a drill-down approach, the end result is a comprehensive map detailing the linkages between tier-one, tier-two, and tier-three suppliers super-imposed on a geographical map. The driving force behind this idea is to be able to trace individual parts to the exact site where they're manufactured. In this way, companies can ensure sustainability practices from the production of raw materials through the finished goods. The approach allows companies to identify and anticipate vulnerabilities in their supply chain. It unlocks predictive analytics capabilities and enables them to act proactively. The research is particularly compelling because it unites network science theory with empirical data and presents the results in a visual, intuitive manner.

Keywords : data mining, supply chain, empirical research, data mapping

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