



**LEVERAGING TECHNOLOGIES TO
MANAGE HUMAN RIGHTS RISKS AND
EMPOWER WORKERS IN BUSINESS
SUPPLY CHAINS**

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Introduction

An array of technologies has emerged in recent years that have the potential to help business identify and manage human rights risks in their operations and supply chains. Technology companies around the world, often in partnership with non-profit organisations and labour rights experts, are developing and marketing tools aimed at increasing supply chain transparency, product traceability, and operational efficiency. This report provides an overview of these technologies and their potential to assist companies in their responsible sourcing efforts. The technologies covered in this report are:

- 1) Radio Frequency Identification (RFID) and remote sensing;
- 2) Blockchain and cloud-based assessment software;
- 3) Mobile phone-based crowdsourcing and Interactive Voice Recognition (IVR).

1) Radio Frequency Identification (RFID) and remote sensing

What is it?

RFID is a data collection hardware technology that uses radio waves to store and retrieve data from an identification chip. These chips are known as RFID tags. Hitachi developed RFID tags measuring just 0.05 x 0.05 millimetres in 2007. They can be embedded in paper and plastic (New 2010), used to label jewellery (BBC 2007) and to tag bees. Usually, an RFID system requires three main components: (i) the reader/writer, (ii) the RFID tag and (iii) application software for processing the information. Reading range is limited to around 30 meters.

How does it work?

An RFID tag can be used in two ways. It can store data directly and be updated as the item moves through the supply chain. Alternatively, the tag can hold a unique identifier, which acts as a pointer to web-based supporting data.

How can it help with responsible supply chain management?

Because RFIDs are so inconspicuous, they can be embedded in products to provide real-time product status updates as they progress through the supply chain production process (BBC 2007). The provenance data becomes part of the material. The data can help to reduce transportation costs and time, streamline supply chain logistics, protect licencing agreements, and to ensure that production is not being outsourced to unauthorised locations.

Example of use

Mobile-phone manufacturers have developed RFID readers in mobile phones that allow consumers to read RFID tags in products they buy to gain access to data about the product's origin, certifications and trajectory through the chain.

Technology company, TexTrace, produces clothing labels embedded with RFID for compa-

nies such as Vivienne Westwood. The TexTrace RFID brand label is an integral part of the product as opposed to a hangtag or care label. TexTrace encodes the tags and ships them to Vivienne Westwood's suppliers. The items can then be authenticated to prevent counterfeits.

Limits and risks

- Companies control the data. Consumers are reliant on brands to release provenance information.
- It is unclear how detailed information as to the working conditions under which a product is produced may be collected through RFID technology.
- The unprecedented level of supply chain visibility that is made possible by RFID may give rise to consumer privacy invasion, corporate system security concerns, and industrial espionage (Tajima 2011).



TexTrace RFID chips proves the products authenticity.

Illustration: TexTrace

2) Blockchain and cloud-based software

What is it?

A blockchain is a digital ledger that is distributed, decentralised, verifiable and irreversible. It is a shared (not copied) database that everyone in the network can see and update.

How does it work?

Blockchain can be used to record transactions of almost anything of value. Whenever a transaction is made, it gets placed in a 'block' of data and included in an ever-growing chain, which is continually downloaded onto every user's computer, making its corruption difficult and increasing its transparency.

How can it help with responsible supply chain management?

As a distributed ledger, blockchain can increase supply chain transparency with everyone in an agreed network able to see and verify the ledger, but with no individual able to alter or delete the history of transactions (LeBlanc 2017, Visser 2018). Systems can be designed to identify any violation of agreed upon limits, thus creating the ability to respond to problems and mitigate them at the time of occurrence, rather than days later, and several steps further removed (LeBlanc 2017).

Examples of use

In 2016, blockchain was trialled in the fishing industry, notorious for human rights abuses and illegal fishing. In a six-month-long pilot, UK-based company Provenance used mobile, blockchain technology and smart tagging to track fish caught by fishermen with verified social sustainability claims (Provenance 2016). Currently, the trade of fish and seafood is tracked by paper records and tags on the fish.

Blockchain technology is also being tested in the fashion industry. Label Babyghost teamed up with Shanghai-based company BitSE, and its VeChain project, a cloud product management solution integrated with blockchain technology that puts unique IDs on the blockchain and can verify if an item is genuine or not. Consumer smartphones communicate with the small VeChain chip embedded inside the clothing or accessory, which then tells its history to the consumer (Campbell 2016).



Skipjack tuna fisherman

Photo: Provenance

Limits and risks

Human intelligence is still needed to verify claims about the labour and sustainability practices associated with products (Coca 2017). Only a few pilot projects, of limited scale and scope, have been undertaken to trial the use of blockchain ledger technology to manage corporate human rights risk.

3) Interactive Voice Recognition (IVR) and Mobile-based crowdsourcing

What is it?

Interactive Voice Recognition (IVR) is a system that uses speech recognition to interact with the caller through recognizing voice and keypad use. Crowdsourcing for responsible supply chain management is the practice of obtaining information by enlisting a large number of people. While an 'older' form of technology when compared with those above, the potential scope and usages of IVR and mobile-based crowdsourcing remain underexplored.

How does it work?

Workers are provided with a secure, anonymous channel through which to provide information about their working conditions. Real-time data from workers can be collected as workers call in or respond via apps. It is a superior form of data collection when compared to the more established method of auditing, which has a small number of data points and is often confined to a narrow compliance checklist. Mobile phone-based crowdsourcing tools are capable of gathering real-time, reliable information from workers, while providing heightened privacy and safety from victimisation. Workers can raise issues as they arise, not just when monitors visit factories. The reliability of data is increased by multiple data points (information from a wide pool of workers).

Examples of use

Laborlink is a mobile platform that establishes a communication channel for workers to share their viewpoints, and for brands to have real-time insight into factory conditions, safety, working hours and wages across their supply chains. It utilizes technologies that people already have. In Cambodia or India, this can simply be a mobile phone with SMS capability, whereas in China, the app WeChat is commonly used. Since its launch in 2010, Laborlink has been deployed in 16 countries and has reached over one million workers worldwide, involving 35 brands and retailers and 382 factories (Good World Solutions). American Eagle, C&A, Levi's Straus, Marks & Spencer, Primark, Target, and HPE all use Laborlink in their supply chains.

In 2010, supply chain analytics company LaborVoices launched a labour analytics tool that enables workers to call its system whenever it is convenient and safe for them, free of charge, and leave feedback anonymously. The system is based on Interactive Voice Recognition. The company partners with multinational corporations looking to collect data on the performance of subcontractors.

Limits and risks

The success of crowdsourcing tools depends on how such tools are designed, marketed, and on how data collected is used. They must be designed according to workers' digital literacy levels. They depend on users contributing data so need to be actively promoted among workers and regularly updated so as to stay relevant to workers and brands. Workers' motivation to engage with such tools is at the core of design.

Key lessons

- An increasing number of brands and civil society actors are recognising technology's potential to improve supply chain management practices.
- Each of the technologies described in this report has different strengths and limitations.
- To date, use of blockchain and RFID has been targeted primarily at provenance not on ethical standards of production, although there are signs this is changing.
- Findings from pilot programs such as Provenance's Sea to Plate initiative suggest that technologies that enable enhanced traceability, transparency, and verifiable production data are best used in combination with existing multi-stakeholder initiatives and measures directed at facilitating worker voice.
- A range of technologies are emerging that enable consumers to hover their smartphones over a product and obtain detailed and accessible information about its' origin and production. Consumer demand for such information at point of sale is only likely to increase.
- The legitimacy and credibility of information collected, analysed and reported using these technologies will depend on the manner by which it is generated, and the extent to which company practice is consistent with internationally-authoritative responsible sourcing standards.
- There are opportunities for regulators to use these technologies to gather data as well, which are currently under-explored.



Part of Provenance's Sea to Plate Process

1. Fishermans registers catch
2. Smart stickers on tuna cans
3. Consumer scanning smart sticker on tuna can

Photos: Provenance

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