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Piloting a method for the aggregation and visualisation of audit data to enhance forced labour risk identification

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Abstract

Ethical auditing is one key way that companies assess compliance with labour standards and identify issues relating to forced labour. Essential information on working conditions is collected each year across thousands of factories, yet data remains proprietary, is not harmonised in format or content, and is under-utilised with costs often passed on to workers. This can lead to an underestimation of the risk of forced labour in supply chains. To overcome such challenges, the authors piloted a unique method for the collection, aggregation, analysis and visualisation of social audit data from disparate, pre-existing but hitherto under-utilised resources. Data from 2,946 audits across six Asian countries was aggregated to pilot an online interactive risk screening tool. This paper describes methods used by the team and provides an overview of the online tool. Implications for improving social compliance auditing, risk identification, data classification and aggregation are discussed.

Background

It is estimated that 24.9 million people are in modern slavery in the Asia Pacific region, with approximately 66% in forced labour¹. The apparel industry accounts for a large proportion of this figure¹. Asia Pacific has been labelled the 'garment factory for the world', with millions employed in the industry². For example, in India, the garment sector employs about 40 million

¹ The Global Slavery Index. 2018. *Asia and the Pacific regional findings* <https://www.globallslaveryindex.org/2018/findings/regional-analysis/asia-and-the-pacific/>

² International Labor Organization. 2016. *Wages and Productivity in the Garment Sector in Asia and the Pacific and the Arab States*. https://www.ilo.org/wcmsp5/groups/public/---asia/---ro-bangkok/documents/publication/wcms_534289.pdf

workers directly and 60 million indirectly³, yet one in every two garment sector workers in India are reportedly paid below the minimum wage⁴. In Vietnam, the garment and textile industry is the single largest source of formal private sector employment with a direct labour force of more than 2 million people⁵, and yet there are reports of a high number of abuses taking place.

The global fashion industry has recently been valued at around US\$3 trillion and accounts for around 2% of the world's gross domestic product⁶. A large part of the industry is centred around Asia Pacific and in 2014 the region accounted for US\$601.1 billion (59.5%) of global exports of garments, textiles and footwear⁷. Reports suggest that South Asia needs to create jobs in labour-intensive industries where it enjoys a comparative advantage, such as apparel, to '*employ its burgeoning youth and attract more women into the workforce*'⁸. The garment industry has previously been labelled a '*stepping-stone to development*'⁹ with an important role in providing a competitive advantage to boost economic growth and improve children's health and education¹⁰.

Ensuring standards of work for those in, or who are entering the apparel manufacturing workforce is therefore vital. However, it is made increasingly complex by the presence of multi-tiered supply chains within the industry. In simple terms, a supply chain consists of three or more organisations or individuals directly involved in the upstream and downstream flows of products,

³ Geeta Sekhon, *Forced Labor and Child Trafficking in India's Garment Sector*, accessed May 3 2019, <https://asiafoundation.org/2017/09/20/forced-labor-child-trafficking-indias-garment-sector/>.

⁴ DAV Pimentel, IM Aymar and M Lawson. 2018. *Reward Work, Not Wealth: To end the inequality we must build an economy for ordinary working people, not the rich and powerful*, (Oxfam). https://oi-files-d8-prod.s3.eu-west-2.amazonaws.com/s3fs-public/file_attachments/bp-reward-work-not-wealth-220118-en.pdf

⁵ Worker Rights Consortium, 2013. "Made in Vietnam: Labor rights violations in Vietnam's export manufacturing sector." https://www.workersrights.org/wp-content/uploads/2016/02/WRC_Vietnam_Briefing_Paper.pdf.

⁶ FashionUnited, 2021. "Global Fashion Industry Statistics: International apparel", accessed May 3, 2019, <https://fashionunited.com/global-fashion-industry-statistics/>.

⁷ International Labor Organization. 2016. *Wages and Productivity in the Garment Sector in Asia and the Pacific and the Arab States*. https://www.ilo.org/wcmsp5/groups/public/---asia/---ro-bangkok/documents/publication/wcms_534289.pdf

⁸ Rina Chandran, "South Asia Clothing Industry Can Employ Millions More Women, Boost Growth: World Bank", accessed 3 May 2019, [South Asia clothing industry can employ millions more women, boost growth - World Bank | Reuters](https://www.reuters.com/article/world-bank-south-asia-clothing-industry-can-employ-millions-more-women-boost-growth-idKCN1M00001)

⁹ Maximilian Martin, 2013. *Creating Sustainable Apparel Value Chains: A Primer on Industry Transformation*, (Impact Economy). http://www.impacteconomy.com/papers/IE_PRIMER_DECEMBER2013_EN.pdf

¹⁰ Rina Chandran, "South Asia Clothing Industry Can Employ Millions More Women, Boost Growth: World Bank", accessed 3 May 2019, [South Asia clothing industry can employ millions more women, boost growth - World Bank | Reuters](https://www.reuters.com/article/world-bank-south-asia-clothing-industry-can-employ-millions-more-women-boost-growth-idKCN1M00001)

services, finances, and/or information from a source to a customer¹¹. Within multi-tiered supply chains, tiers connect to each other throughout the product's manufacturing process, converting raw materials (defined as 'tier 3') through material and component processing ('tier 2') into finished products ('tier 1'). In addition to multiple tiers, supply chains are also extended through outsourcing and stretched by globalisation¹². These greatly increase the complexity of the supply network, decrease the visibility in risk and operation process¹³, and make issues related to forced labour difficult to detect¹⁴. Visibility within the supply chain is greater at the higher tiers but multi-tier transparency is required to appropriately understand supply chain risk¹⁵.

The International Labour Organization (ILO) defines forced labour as '*all work or service which is exacted from any person under the menace of any penalty and for which the said person has not offered himself voluntarily*'¹⁶. Efforts to ensure that companies are taking effective steps against forced labour within supply chains are increasing. For example, a list of indicators to assist in identification of forced labour is offered by the ILO¹⁷, and the Ethical Trade Initiative Base Code Guidance on modern slavery offers guidance on risk identification, due diligence, awareness and remediation¹⁸. An increasing number of laws such as the California Transparency in Supply Chain Act¹⁹, the UK Modern Slavery Act of 2015²⁰ and the Australian

¹¹ John T Mentzer, William DeWitt, James S Keebler, Soonhong Min, Nancy W Nix, Carol D Smith and Zach G Zacharia. 2001. "Defining supply chain management" *Journal of Business Logistics* 22, 2: (2001). doi.org/10.1002/j.2158-1592.2001.tb00001.x

¹² Philipp C. Sauer and Stefan Seuring, "Extending the reach of multi-tier sustainable supply chain management – insights from mineral supply chains". *International Journal of Production Economics*, 217 (2019):31-43, doi.org/10.1016/j.ijpe.2018.05.030

¹³ Ying Kei Tse and Kim Hua Tan, "Managing Product Quality Risk and Visibility in Multi-layer Supply Chain". *International Journal of Production Economics*, 139, 1, (2012): 49–57. doi.org/10.1080/00207543.2010.508942

¹⁴ Stefan John New, "Modern slavery and the supply chain: the limits of corporate social responsibility?" *Supply Chain Management*, 20, 6: (2015). <https://doi.org/10.1108/SCM-06-2015-0201>

¹⁵ Sedex Global and BSR, 2014. *Going Deep: The Case for multi-tier transparency*, (Sedex Global), <https://cdn.sedexglobal.com/wp-content/uploads/2016/09/Sedex-Transparency-Briefing.pdf>.

¹⁶ International Labour Organisation, 1930. Convention C029 - Forced Labour Convention, 1930 (No. 29). [Convention C029 - Forced Labour Convention, 1930 \(No. 29\) \(ilo.org\)](https://www.ilo.org/convention/C029-Forced-Labour-Convention-1930-No-29)

¹⁷ International Labour Organisation, *Indicators of Forced Labour*, (International Labour Organization), https://www.ilo.org/global/topics/forced-labour/publications/WCMS_203832/lang--en/index.htm

¹⁸ Ethical Trade Initiative, 2017. "Base Code Guidance: Modern Slavery". [eti_base_code_guidance_modern_slavery_web.pdf](https://ethicaltrade.org/eti_base_code_guidance_modern_slavery_web.pdf) (ethicaltrade.org)

¹⁹ State of California Department of Justice, 2010. "The California Transparency in Supply Chains Act". [SB 657 Home Page | State of California - Department of Justice - Office of the Attorney General](https://www.sos.ca.gov/legislation/legislation-content.aspx?leg_bill_number=657)

²⁰ UK Government Legislation, 2015. "Modern Slavery Act 2015". <https://www.legislation.gov.uk/ukpga/2015/30/contents/enacted>

Modern Slavery Act (2018)²¹, which require companies to disclose due diligence efforts to assess and mitigate modern slavery risk in their value chain, are also being employed to tackle the issue. Nevertheless, an analysis of secondary data against company reporting for such legislation suggests that auditing against Codes of Conduct is the most widely used method by which to detect issues of concern²², highlighting how social compliance auditing remains an integral part of ensuring that abuses are not taking place and that working conditions and production are in line with local law, company policy and ethical protocol. The key objective of these social audits is to provide an independent opinion on the presence or absence of compliance between adopted standards for socially responsible behaviour and their implementation²³, including abuses such as forced labour.

The collapse of the Rana Plaza building in Bangladesh in 2013 brought the world's attention to the ineffectiveness of auditing practices in identifying workplace violations^{24 25}. Since then, there has been an increase in focus on the health and safety of workers in the garment industry, with reforms from the ILO across Asia and an increased participation from government. Rana Plaza was a catalyst for many brands and retailers to act and ensure greater accountability and transparency in supply chains, under the threat of losing business²⁶. As a consequence, the importance of conducting audits to monitor and validate ethical practice to combat forced labour, modern slavery and human rights abuses within the textile and apparel supply chains has been highlighted²⁷.

The social compliance audit industry itself is estimated by some to be worth US\$80 million a year²⁸. It is estimated that up to 80% of ethical sourcing budgets are used up on ethical

²¹ Federal Register of Legislation, 2018. "Modern slavery Act 2018". [Modern Slavery Act 2018 \(legislation.gov.au\)](https://www.legislation.gov.au)

²² Mark Stevenson and Rosanna Cole, "Modern slavery in supply chains: a secondary data analysis of detection, remediation and disclosure". *Supply Chain Management*, 23/2, (2018): 81-89. doi.org/10.1108/SCM-11-2017-0382

²³ Miroslava Peicheva, Albena Kraeva-Miteva and Hristina Harizanova. "Study of the Social Audit and Standards for Social and Environmental Responsibility – Case Study of Bulgaria", *Economic Alternatives*, 2: (2017): 449-474. https://www.unwe.bg/uploads/Alternatives/9_Alt_english_broi_3_2017.pdf

²⁴ Jette Steen Knudsen, Samira Manzur, Elizabeth Remick and Drusilla Brown, 2016. *After Rana Plaza: From Building Safety to Social Dialogue*. Berkeley. https://www.researchgate.net/publication/316740575_After_Rana_Plaza_From_Building_Safety_to_Social_Dialogue

²⁵ Clean Clothes Campaign, 2019. *Fig Leaf for Fashion*, Clean Clothes Campaign, 2019. <https://cleanclothes.org/file-repository/figleaf-for-fashion.pdf>

²⁶ Michael Safi, Dominic Rushe, "Rana Plaza, five years on: safety of workers hangs in balance in Bangladesh". *The Guardian*, April 24, 2018. <https://www.theguardian.com/global-development/2018/apr/24/bangladeshi-police-target-garment-workers-union-rana-plaza-five-years-on>

²⁷ Chris White, "Five Years After Rana Plaza Disaster, Are Asia's Sweatshops a Thing of the Past?", *South China Morning Post*, April 22, 2018, <https://www.scmp.com/week-asia/business/article/2142639/five-years-after-rana-plaza-disaster-are-asias-sweatshops-thing>

²⁸ Rachel Wilshaw, "Social audits flawed as a way of driving sustainable change", *The Guardian*, July 12 2011, <https://www.theguardian.com/sustainable-business/blog/social-audits-flawed-companies-developing-world>

auditing alone²⁹. However, audits themselves are complex and time intensive. Auditors need to be specifically trained to ensure compliance but are increasingly presented with a large number of indicators for assessment and across large factories, meaning auditors are often overburdened³⁰. *‘Since the birth of ethical sourcing [...] there has been a proliferation of differing codes, audits, protocols and approaches as part of company efforts. This duplication and lack of convergence causes issues for the industry, drains suppliers’ resources and makes it difficult to benchmark their efforts’*³¹. This duplication is financially punitive to the industry, but concerning, costs are often passed on to the worker. Difficulties with social audits include the fact that they do not promote action on human rights related risk³², typically focus on higher tiers, are a snapshot of a moment in time³³, are argued to protect commercial interests, and fail to detect environmental and labour problems³⁴. Recent efforts to improve detection and practices include methods to amplify worker voice³⁵ and recommendations to map supply chains³⁶. These are important steps although these can themselves face challenges³⁷.

When assessing labour conditions and forced labour risk, auditors uncover indicators of risk by looking at a range of interconnected factors, including the process of recruitment, indicators of debt bondage, and living and working conditions. An inference is then made on the basis of these indicators. Audit firms have also developed different frameworks to detect, collect and process this information. These firms charge the factories or the brands for their services and

²⁹ Juliane Reinecke, Jimmy Donaghey, Nancy Bocken and Lucas Lauriano, *Business Model and Labour Standards: Making the Connection*, Ethical Trading Initiative, London. [Business models & labour standards.pdf \(ethicaltrade.org\)](https://ethicaltrade.org)

³⁰ Leonie Barrie, “Apparel Factory Auditing Appears in the Firing Line”, 2017, accessed May 3, 2019, https://www.just-style.com/analysis/apparel-factory-auditing-appears-in-the-firing-line_id129814.aspx.

³¹ Sustainable Brands, “World's Leading Apparel Brands, Industry Groups Join Forces to Transform Global Labor Conditions”, 2015, accessed May 3, 2019, <https://sustainablebrands.com/read/leadership/world-s-leading-apparel-brands-industry-groups-join-forces-to-transform-global-labor-conditions>

³² Jolyon Ford, Justine Nolan, “Regulating transparency on human rights and modern slavery in corporate supply chains: the discrepancy between human rights and the social audit”. *Australian Journal of Human Rights*, 26, 1 (2020): 27-45. doi.org/10.1080/1323238X.2020.1761633

³³ Ethical Trade Initiative, 2017. “Base Code Guidance: Modern Slavery”. [Base Code Guidance: Modern slavery | Ethical Trading Initiative \(ethicaltrade.org\)](https://ethicaltrade.org)

³⁴ Genevieve LeBaron, Jane Lister and Peter Dauvergne, “Governing Global Supply Chain Sustainability through the Ethical Audit Regime”, *Globalizations*, 14:6, (2017): 958-975. doi.org/10.1080/14747731.2017.1304008

³⁵ Hannah Thinyane, Francisca Sasseti, 2020. “Digital Technology for Unmasking Labour Exploitation in Supply Chains”. In: *The Future of Digital Work: The Challenge of Inequality*, edited by Bandi Rajendra K., C.R. Ranjini, Stefan Klein, Shirin Madon and Eric Monteiro. Springer. doi.org/10.1007/978-3-030-64697-4_20

³⁶ Ethical Trade Initiative, 2017. “Base Code Guidance: Modern Slavery”.

³⁷ Laurie Berg, Bassina Farlenlbun, Angela Kintomias, “Addressing Exploitation in Supply Chains: Is Technology a Game Changer for Worker Voice?” *Anti-Trafficking Review*, 14, (2020): 47-66 [DOI/10.14197/atr.201220144](https://doi.org/10.14197/atr.201220144)

disclose the audit results only to those commissioning the audit or compliance certifications³⁸. This means that valuable information relating to the prevalence of forced labour within a specific factory unit remains within the audit and the specific case, cannot be cross referenced with audit findings carried by other brands in the same factory, and is hard to review over time and compare. In addition, factories are often audited multiple times even if they produce a small percentage of a brand's products, or only samples, which in itself can cause further issues. The Ethical Trading Initiative, a tri-partite organisation with over 100 member brands, stated: *'Anecdotally, we have heard of some factories being audited up to 14 times in a single month by different brands. This has contributed to so-called audit fatigue, resulting in a lack of engagement'*.³⁹

While there have been efforts to improve and streamline practices, for example, the 'Social Labour Convergence Project' (SLCP)⁴⁰, audit data remains available only to a small portion of companies, is not harmonised, and cannot be easily analysed to understand forced labour risk. Evidence suggests that efforts for detection are hampered by a lack of effective standardised indicators and new systems are required that consider the differing nature of supply regions⁴¹. NGO reports indicate companies are concerned that audits are unable to detect instances of modern slavery⁴² and there is arguably a need for more holistic approaches⁴³. A report on the Continuum of Exploitation⁴⁴ further elaborates: *"Indicators are the most commonly used method of identification of forced labour in practice. [...] The use of indicators is common and provides guidance for various actors and enforcers. However, their application is still often problematic in practice when it comes to determining the extremity of a situation. This is because the majority of cases occupy the middle ground between the two extremes and are hard to fit into a straightforward 'exploitation – yes/no' category"*. The current reliance on audits necessitates a need to further improve practices to identify forced labour, develop systems to integrate worker

³⁸ Clean Clothes Campaign, *Fig Leaf for Fashion*, Clean Clothes Campaign, 2019. <https://cleanclothes.org/file-repository/figleaf-for-fashion.pdf/view>

³⁹ Ethical Trading Initiative, "Audits and beyond", accessed June 2021, [Audits and beyond | Ethical Trading Initiative \(ethicaltrade.org\)](https://ethicaltrade.org)

⁴⁰ The SLCP was initiated in 2015 to replace current proprietary tools and enable comparability of data. Although the SLCP is branding itself as an assessment framework, the convergence initiative does not extend to standards, but instead it aims to be "judgement free," accessed June 10, 2021. [Social & Labor Convergence Program \(slconvergence.org\)](https://slconvergence.org)

⁴¹ Stefan Gold, Alexander Trautrim, Zpe Trodd, "Modern slavery challenges to supply chain management". *Supply Chain Management*, 20, 5 (2015): 485-494. doi.org/10.1108/SCM-02-2015-0046

⁴² The Mekong Club, *Business Response to Slavery Survey Report 2017*, (The Mekong Club), https://themekongclub.org/wp-content/uploads/2017/11/mekong_club_report_external_final.pdf

⁴³ Stefan John New, "Modern slavery and the supply chain: the limits of corporate social responsibility?"

⁴⁴ Klara Skřivánková, 2010. "Between Decent Work and Forced Labour: Examining the Continuum of Exploitation" (York, 8 UK: Joseph Rowntree Foundation) [Between decent work and forced labour: Examining the continuum of exploitation \(gla.gov.uk\)](https://www.gla.gov.uk)

voice within current auditing methods, and to make use of previously collected data with efforts to move towards more holistic methods. There is a clear need for more standardisation across the auditing community when addressing forced labour which would support detection as well as help to address issues around audit fatigue.

Recognising these challenges, this paper presents findings from efforts to pilot a method for the analysis of forced labour risk from audit data by sector and by process within the apparel industry. First, we describe the rationale and process underlying the tool development working with large multi-national companies. Next, we present an overview of methods and key findings from analysis of audit data from two key sources, an overview of a visual tool and highlight how results have been used by companies. Finally, we discuss opportunities and limitations of this approach.

Concept

The project was initiated by a Hong Kong-based NGO (The Mekong Club), working specifically with the private sector to address issues related to modern slavery. A workshop with 10 multi-national brands and retailers identified concerns relating to ‘gaps’ in audit processes, including the inability to conduct in-depth assessments relating to forced labour in supply chains and a lack of insight into manufacturing practices in other regions and countries where the brands were not currently auditing.

Workshop outcomes included the agreed need to focus on aggregating current audit data to provide enhanced visibility across audits, the utility of presenting information in a visual format by industry and region, and the benefits of allowing any company to use this data to inform due diligence processes. Identified challenges included regulations and concerns over sharing data and the diverse audit frameworks and methods used across the industry. Data aggregation and visualisation needed to address these challenges. Several consultation meetings were held to trial ideas and test concepts including utilising pre-existing global forced labour risk indicators. This paper reports on the end product of these consultations and trials.

Methods

Audit data assessment

Pre-existing audit data was obtained via a stepped process.

1. The NGO working on the project operates using a business association model, working closely with multinational brands and retailers to implement the tools and technology needed to combat forced labour within supply chains. They therefore had strong pre-existing relationships with companies. This enabled the project team to speak openly with companies to obtain both audit frameworks as well as the data. After consultation, legal and confidentiality agreements were signed with two companies – one a large

multinational owning multiple apparel brands (Source A) and an international audit company (Source B).

2. The project team accompanied auditing staff from Source A on audits over a period of several days in two factories in China to understand the auditing process.
3. Audit frameworks were reviewed for questions that are related to forced labour and modern slavery. Due to the complicated nature of detection, questions included those within the ILO indicators of forced labour⁴⁵ as well as others that may be related. These also included issues relating to accommodation and health and safety.
4. Anonymised audit data collected in 2015, 2016 and 2017 in six Asian countries (Cambodia, Myanmar, Thailand, Vietnam, China and Taiwan) was requested and provided by companies.

The project team reviewed each audit and categorised according to the following criteria:

- a. Product (apparel, footwear, piece goods, gear, accessories, other).
- b. International Organization for Standardization⁴⁶ (ISO) Code for region/province.
- c. Proxy Tier system. For example, where a finished product was listed, this was classified as an ‘assembly’ facility. Where component processes or production were listed, this was classified as ‘processes and components’. Farming and agriculture activities were classified as ‘raw materials’. The majority of information (approximately 88%) came from ‘assembly’ facilities and 12% from ‘processing and components’ facilities.

Additional re-working of data format was also required due to the different audit processes carried out by the data providers. Auditors for Source B carried out audits across a range of companies using a standardised framework. For Source A, auditors were trained specifically on the company’s own Code of Conduct and to use investigation-style questions during the audit (see Table 1). In practice, this meant that questions from Source A contained multiple ‘free text’ answers that required further analysis. Therefore, each free text response for Source A had to be analysed individually to provide it with a code that could be applied universally across data and used in a quantitative format.

To do this, initially, a coding frame of 11 categories based on the ILO criteria of forced labour was produced. After coding 100 examples of this data, the team felt that this coding frame did not adequately capture nuances in the data. Therefore, a data-driven thematic approach was adopted⁴⁷. Approximately 10% of the data was reviewed, and, as each free text answer was analysed, a decision was made as to whether the data would fall into a pre-existing category, or if

⁴⁵ International Labour Organization, *Indicators of Forced Labour*, (International Labour Organization), https://www.ilo.org/global/topics/forced-labour/publications/WCMS_203832/lang--en/index.htm

⁴⁶ International Organization for Standardization, “Country Codes – ISO 3166”, accessed 10 June 2021 [ISO - ISO 3166 — Country Codes](#).

⁴⁷ Richard E Boyatzis, *Transforming Qualitative Information: Thematic Analysis and Code Development*. London: Sage, 1998.

a new category needed to be created. This method was also felt to be the best way to understand data for future coding purposes. This resulted in 60 categories. Categories related to overtime, rest time, child labour, employment of migrant and temporary labour, recruitment fees, health and safety, dormitory and privacy issues, illegal deductions, record keeping and policy, bonded labour, deprivation of liberty, accommodation, harassment threats and violence, retention of identity documents, and factory refusal to provide information to auditors. Once the framework was complete, all data was re-analysed and coded according to the new categories. A final, independent review of the data was undertaken once categorisation was complete. A team member not previously familiar with the data used the same scheme to code approximately 10% of data cases, any discrepancies were highlighted, and the coding frame was reviewed again.

Table 1: Selected Audit Standard Questions and example responses

Description of investigation*	Example audit response	Classification by team
Legal obligations are met regarding payroll.	Employees' wages were paid by bank transfer at the end of each month for previous calendar month. However, employees' wages of Jan. 2015 were not paid yet so far till Mar. 10, 2015 (the audit day).	Withholding of wages and payment issues
Legal obligations in respect of working hours are met. This does not exceed 60 hours per week including overtime.	Through the payroll and time record review of 20 worker samples in March, May, June and July 2016, it was noted that an average overtime was 3 hours per day, maximum overtime per day was 4.5 hours per day, and 2 of 20 worker samples had 73.5 hours per week in July 2016.	Overtime

Investigate evidence to ensure that there are no incidents of forced or prison labour.	Migrant workers had to pay agent fees in their country in order to get a job in Taiwan. E.g. a sampled Vietnamese worker had to pay NTD44,430 to local agency in Vietnam as agent fee, which was more than one month's salary (NTD20,008).	Employment of migrant labour and recruitment fees
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*To ensure anonymity of sources, examples of data and questions have been paraphrased.

Aggregating data sources

To aggregate the data from across the 2 different sources, a method was required which would add responses from across the different audits, providing one overall risk score. This could then be analysed according to type of risk (indicator), region, product and process.

In the first instance, for Source A, the 60 coding categories had to be refined for ease of aggregation. Categories were collapsed into overarching ('bucket') list of codes. An example of classification method is provided below in Table 2 and a list codes in Table 3.

Table 2: Examples of classification of codes into overarching categories

Source A Code	Source B Code	Overarching code
Inadequate breaks between shifts; rest days have been worked; inadequate rest time	Employees not free to move, take restroom breaks; employees are not free to leave at the end of a shift; rest days are not provided at least 1 in 7; employees not provided with legally required time off	Deprivation of liberty
Wages withheld for annual leave; wage deductions as disciplinary action	Monetary penalties as disciplinary means; facility does not pay for Personal Protective Equipment; Illegal deductions	Illegal deductions

Table 3: Final codes used for classification

Migrant labour issues
Bonded labour
Child labour
Contract issues
Deprivation of liberty
Accommodation issues
Payment issues
Retention of Identification Documents
Withholding of wages
Overtime issues
Threats and violence

Next, an algorithm was created. This used a minimum count strategy across all possible codes meaning if a score of 1 was obtained across any of the codes relating to that category, then a score of 1 was achieved. For example:

Source A <Evidence of bonded labour> IS YES then score 1.

Source B <Deposits are collected as part of employment> IS YES OR <Evidence the facility has employed workers who are trafficked, bonded or imprisoned> IS YES then score 1.*

* To ensure anonymity of sources, examples of data and questions have been paraphrased.

Due to the large variance in the number of overtime hours, additional weighting was applied in the algorithm for specific overtime levels. For example, >72 hours per month, >18 hours per week were scored as ‘2’ if met. Levels were agreed amongst the team and in consultation with experts.

Results

Across the categorised data, there were several differences between data classification systems.

Data coded into the identified ‘bucket’ codes largely mapped against the ILO categories

of forced labour⁴⁸. However, selected differences were noted. For example, a new code was created to categorise data pertaining to ‘accommodation issues’ from the audits. This included security and supervisors staying in the same dormitory and reports of not enough beds for the number of employees living in the accommodation.

There were differences within audits in the number of questions relating to an area covered, for example there appeared more questions from Source B on recruitment and agency whereas notes from auditors from Source A noted more information relating to overtime. The team has attempted to take these into account during the algorithm.

Other concerns noted during the audit process included failure to provide temporary worker lists, workers leaving the factory on audit day and a refusal to provide access to the audit team. Instances of inadequate breaks between shifts, overtime hours and passports being withheld by factories require further investigation (discussed below).

In total, Source A provided 7,741 ‘rows’ of raw data in excel from audits across 42 countries. For the pilot, data was then filtered by the team to include only the 6 selected countries. Each could refer to an individual audit, or there could be multiple ‘rows’ of data for one audit. All audits came from the apparel industry and from factories that had violated at least one of the audit criteria, thus flagged as ‘failed audits’.

For Source B, 9,428 ‘rows’ of data was provided with one line per audit. Data came from ‘failed’ as well as ‘passed’ factory audits and from the 6 Asian countries requested. Data included apparel, household, furniture and food. For the purposes of the pilot, only data relating to apparel was included.

In total, this resulted in data from 2,946 separate audits. The majority of the data was from China (1,529), India (301), Vietnam (218) and Bangladesh (170). Tables 4 and 5 provide examples from China and India.

⁴⁸ International Labour Organization, *Indicators of Forced Labour*; (International Labour Organization), https://www.ilo.org/global/topics/forced-labour/publications/WCMS_203832/lang--en/index.htm

Table 4: Incidents in the Guangdong region in China for apparel audits

Product	Process	Number of audits	Number of Incidents
Apparel	Processes & Components	13	8
Apparel	Assembly	260	205
Accessories	Processes & Components	1	1
Accessories	Assembly	217	167
Footwear	Processes & Components	27	19
Footwear	Assembly	113	91
Gear	Assembly	10	12
Other**	Processes & Components	19	9
Other	Assembly	19	15
Piece Goods	Processes & Components	4	2
Piece Goods	Assembly	4	3

** Not classified as apparel, footwear, accessories or piece goods

NB Exclusions from the table relate to areas where no data exists, for example, Gear – Processes & Components.

Table 5: Incidents in the Karnataka region in India

Product	Process	Number of audits	Incident score
Apparel	Processes & Components	3	3
Apparel	Assembly	188	167
Accessories	Assembly	1	0
Footwear	Assembly	1	2
Other**	Assembly	54	48
Piece Goods	Processes & Components	3	3

** Not classified as apparel, footwear, accessories or piece goods

NB Exclusions from the table relate to areas where no data exists, for example, Gear – Processes & Components.

Based on this data analysis, an online risk tool to facilitate easy, aggregated and anonymised visualisation of the data was developed and piloted.

To use the risk tool, users are able to select from a region, product or process from a drop-down menu. The tool then provides an image of the selected region with a summary of the number of incidents for that location, according to the number of audits that have been recorded in the database. The total number of incidents is higher than the total number of audits when more than one incident is associated with an audit. Additional data is also provided relating to country risk from the Global Slavery Index (prevalence of modern slavery per country and country’s government rating)⁴⁹ as well as from the US State Department ‘Trafficking in Persons Report’ (country government ‘tier ranking’)⁵⁰. The online tool was also designed to be linked to a database of resources on forced labour. This included NGO reports, media articles, and anti-forced labour initiatives (led by brands, NGOs and governments) according to country, region, process and material. This ensures that the user of the online interface has access to multiple sources of data that can be easily triangulated and compared to ensure better risk identification and also supports better integration of NGO practices to support companies⁵¹.

⁴⁹ Global Slavery Index, “Modern Slavery: A hidden everyday problem”, accessed May 6, 2019, <https://www.globallslaveryindex.org/>

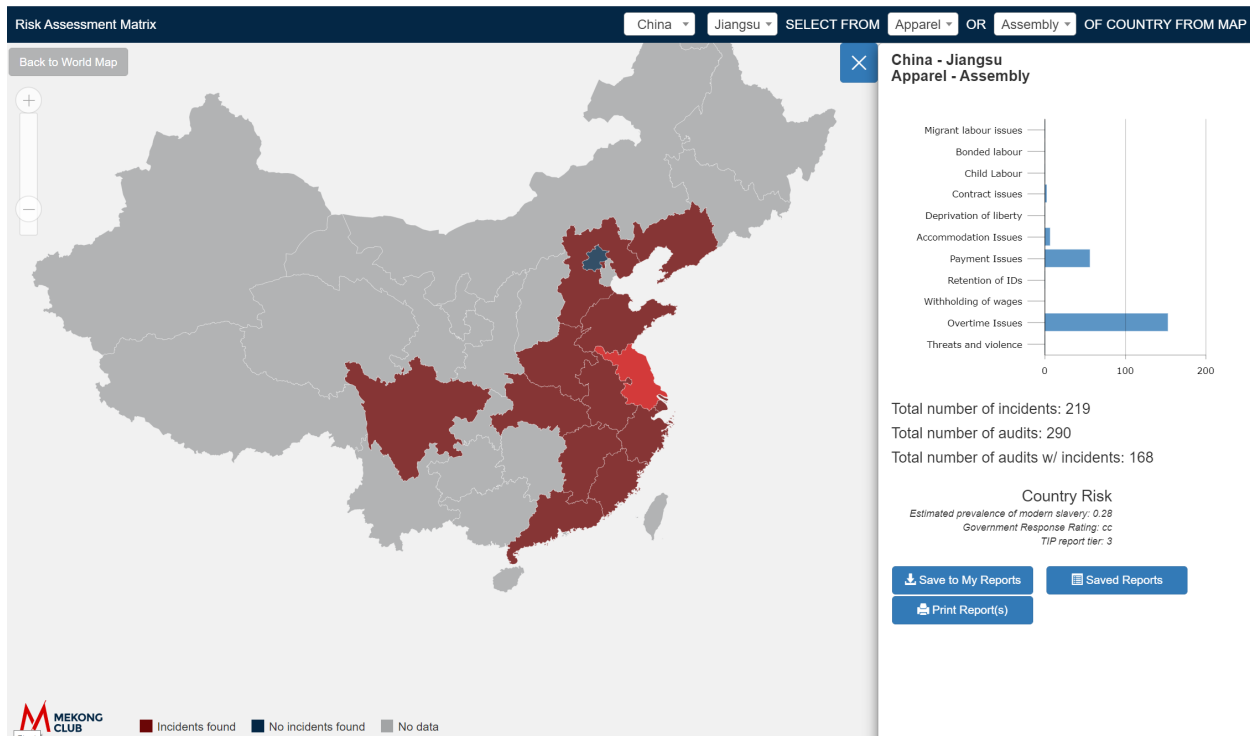
⁵⁰ U.S. Department of State, *2018 Trafficking in Persons Report*, (U.S. Department of State, 2018). <https://www.state.gov/j/tip/rls/tiprpt/>

⁵¹ Amy V Benstead, Linda C Hendry and Mark Stevenson, “Detecting and remediating modern slavery in supply chains: a targeted audit approach”. *Production Planning & Control*, (2020). doi.org/10.1080/09537287.2020.1795290

Piloting a method for the aggregation and visualisation of audit data to enhance forced labour risk identification. Fortune. Mera. Ling.

An example is provided below.

Image 1: Risk tool visualisation for the Jiangsu region of China for the assembly of apparel



The final project stage was to understand the utility of the pilot tool for stakeholders. Preliminary anecdotal feedback gathered by the NGO suggests that the pilot tool has provided a useful proof of concept with value for large brands, including with modern slavery legal reporting requirements. For example, feedback taken during a workshop with the NGO stated: *“this tool allows us to offer empirical information related to the measurement of risk. This helps to ensure that there is data to back our risk assessments.”* One other company stated: *“when we are going to explore possible business options related to our supply chain, we look at the [tool’s] data to see if there is any relevant information that would help us determine how much due diligence is required.”* In addition, so far, screen shots from the online tool have been used as part of company submissions to both the UK and Australian Modern Slavery Act reporting requirements; examples are provided below.

Image 2: Example of risk tool use within Modern Slavery reporting

China



High-Risk Products:⁶ Garments and Cotton

Indicators (from most to least prevalent):

- Overtime issues
- Payment issues
- Contract issues
- Accommodation issues
- Child labor issues
- Migrant labor issues
- Deprivation of liberty

Completed Actions:

- Unannounced spot checks in factories to detect forced labor
- Fung Group Modern Slavery training

Bangladesh



High-Risk Products: Garments and textiles

Indicators (from most to least prevalent):

- Overtime issues
- Payment issues
- Deprivation of liberty

Completed Actions:

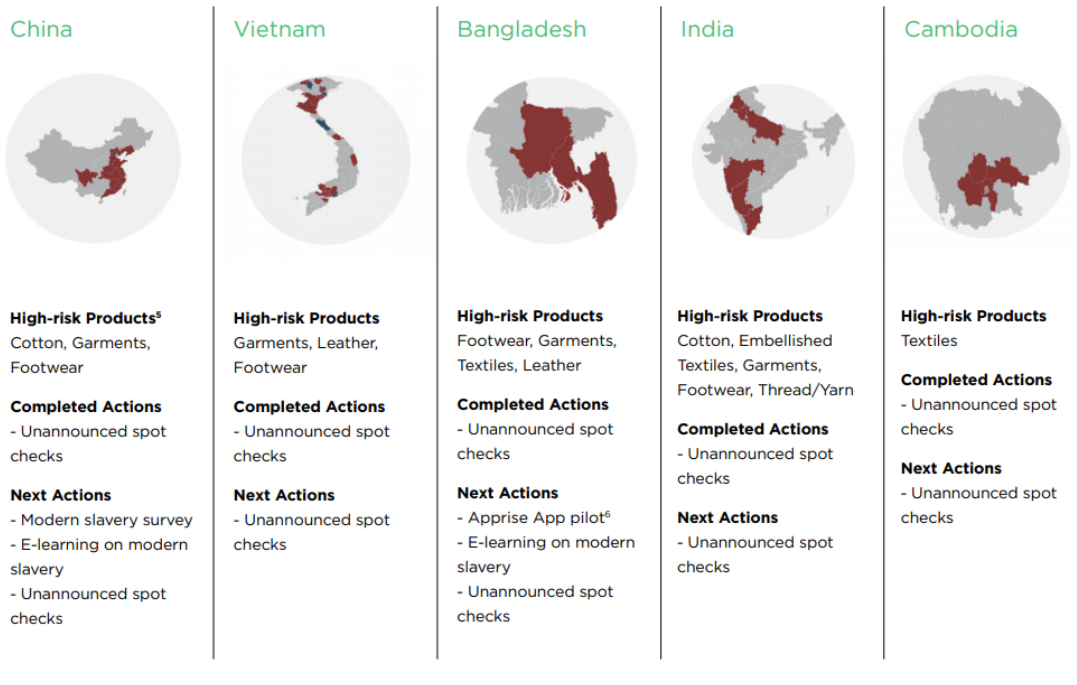
- Unannounced spot checks in factories to detect forced labor
- Code of Conduct training attended by 15 facilities (89% completion rate)

Image 3: Example of risk tool use within disclosure statement on Modern Slavery

C. Modern Slavery Risks, Mitigation and Prevention Measures in Production Markets

We use the Mekong Club Risk Assessment Matrix (RAM), which combines a series of standardized indicators to better understand our risk associated with raw materials and supply chain processes by product, process and region. The RAM aggregates multiple sources of audit data associated with specific materials and processes from different companies gathered in different formats. The matrix is currently based on the analysis of 70,000 data points and the latest dataset available.⁴

Below we have provided an example of regional and product modern slavery risks for our production countries as identified in the RAM tool. Red indicates states/regions where indicators and/or cases of modern slavery have been identified. Blue indicates where audit data is available but there is insufficient information to conclude whether modern slavery has been identified in the region. Areas uncolored indicate that the RAM does not hold data on that region.



Discussion

This paper has documented the steps taken to obtain hitherto proprietary audit data, pilot a method to aggregate data on incidents relating to forced labour and present these in a visual, easy-to-use format.

As far as we know, this is a unique format for this level of detail. The aim of the exercise

was to pilot a tool that helps to inform companies' due diligence on risk and supply chain decision-making processes rather than to discourage sourcing from regions that present risk. Aggregating data in this way, although labour-intensive, is therefore possible and derives important insights for identification of risk with data from multiple audits providing a more holistic picture of risk across one location. The method of coding data by hand facilitated greater understanding of the data, enabled development of the categories for classification of risk, enhanced comparison with other systems, provided important context to audit results and also provided a large comprehensive data set that can be further analysed and used to enhance auditing processes. The time spent on this development provides a platform for future automation, and methods for streamlining the process are in development. The pilot online visualisation tool, although still in early development stages, has so far shown utility for companies in supporting risk identification with the available data, which is especially important during times of increased reliance on remote auditing due to changed working practices and those brought about by the Covid-19 pandemic.

Nevertheless, only a portion of the data has currently been analysed. For example, data from additional free-text responses from Source B, as well as data from other countries and other industries has yet to be analysed. It is the hope of the project team that following this development of methods for data aggregation, data processing tools and automatic categorisation of data can be used to enhance the speed and the number of sources that can be used. Data within the pilot tool is still being analysed and refined; further analysis is planned as part of efforts to support companies and auditing houses in streamlining questions for auditing and to inform training programs.

Data contained in the pilot tool was collected from two different types of sources. Whilst this necessitated additional analyses, important lessons can be learned from inspection of different types of audits. Use of an 'investigation style' audit where the auditor is provided with freer rein to explore issues may be more helpful in uncovering instances of forced labour, and exploring areas of uncertainty, both during the audit and at subsequent follow up visits. Moreover, as labour laws vary by country and often by region, this may provide the auditor with enhanced abilities to investigate perceived areas of concern that vary according to local custom and law. Previous literature⁵² has suggested that specific auditing for forced labour may be more beneficial, and consideration should therefore be given to audit type and data collection format, as well as how auditors may be trained to investigate and explore issues of forced labour. Nevertheless, it should be noted that this method relies on careful training and supervision of auditors. The data itself is also more cumbersome to aggregate.

During the process of data analysis, it became clear that issues did not always fall neatly into one category. Attention is required on areas of concern that may be hidden or missed during audits, such as incidents that may be related to forced labour but are not directly visible at the factory floor level, such as accommodation, use of migrant workers and recruitment fees. This

⁵² Amy V Benstead, Linda C Hendry, Mark Stevenson, "Detecting and remediating modern slavery in supply chains: a targeted audit approach".

highlights the need for enhanced access by the auditor and further understanding from the perspective of the employee; efforts to include worker voice within audits are welcomed. It is hoped that in future, iterations of this pilot tool will be able to include worker voice technology and further work from local NGOs. This may offer a means of data triangulation and indications of areas of discrepancy for further investigation (such as whether overtime was agreed to). This will also support effective work currently being undertaken by NGOs to improve working practices⁵³.

It is clear that audits contain a plethora of data. This exercise has shown that to date, data is under-utilised for the wider community. A large data-set was generated during this project with only a sub-set so far analysed; gathering data points from diverse sources may be helpful to inform broader data modeling tools and information to predict risk. Furthermore, aggregating previously collected data is cost-effective and supports transparency and accountability. If a higher risk of forced labour is flagged by location or product classification from across multiple audits in the data visualisation tool, it is our hope that this results in enhanced due diligence and analysis of risk. This supports improvement of Code of Conducts and Labour Standards in areas that are not yet as heavily audited and where the garment industry is smaller but growing (such as Myanmar or Ethiopia) to ensure that standards are improved while industries are relatively nascent. Companies should be encouraged to share data where possible and communicate lessons learned so that the industry can become more aware of how to respond to areas of high forced labour risk in supply chains and make more informed supply chain and purchasing decisions. In addition, this pilot concentrated on one area of concern, that of the apparel industry. Methods developed here may also be useful when applied to audits across a range of other areas, and the project team plans to expand the tool to the other industries that data has been gathered on but not yet analysed.

Limitations and considerations for future use

Efforts to classify data into categories were labour-intensive, and coding large amounts of data by hand has a greater chance of resulting in a coding error. Further review of the data will be undertaken, together with investigation into the use of automation. There may also have been additional data that has not been represented to show that there were extenuating circumstances as to why some of the indicators were encountered. For example, evidence as to why an employee did not leave at the end of the shift, or an additional question that was not provided to the project team to suggest that an employee asked for a ‘savings scheme’ for wages. Within the audits themselves, questions may have been asked in multiple formats and ways to ensure that data is accurately captured. However, this can result in additional questions and possible conflicting answers. Whilst efforts have been made throughout this process to take this into account, it is possible that this may result in inaccuracies in risk presentation.

⁵³ Amy V Benstead, Linda C Hendry, Mark Stevenson, “Detecting and remediating modern slavery in supply chains: a targeted audit approach”.

The pilot was designed to address an un-met need using audit data. The pilot tool integrated some NGO data but it was not possible to integrate worker voice solutions. Future iterations of the tool can be combined with worker voice technology and tools to assess risk of forced labour. These include worker voice digital solutions, helplines, ‘whistle blower’ systems, apps to support independent interviews of a larger number of workers in their own language during the audit process and worker advocacy. This will help to ensure that data can be verified and collated across multiple sources⁵⁴ which will also help to identify possible areas of concern and inconsistency. Similarly, as some audits contain information relating to migrant labour, using this data in combination with tools that analyse migrant labour flow will be helpful to enhance risk detection. Future tools and aggregations should take advantage of the variety of indices currently available, such as information on local labour laws, and embed specific data to enhance algorithms and form stronger conclusions about risk.

It is recognised that audit frameworks do not necessarily capture sub-contracted facilities or homeworkers (the ‘informal economy’). In addition, data in the tool is largely from assembly (Tier 1). Whilst it is recognised that efforts need to be concentrated on investigation into lower tiers, it is clear from the data that there are still incidents occurring within Tier 1 and 2 that need to be examined. Efforts for the detection and resolution of forced labour at every stage of the supply chain need to be made.

Recognising the limitations, we believe that it is possible to bridge gaps in data collection to bring together data from multiple formats via cross-company and cross-sector collaboration. Use of otherwise un-used historical data also forms a salient contribution in understanding changing patterns of risk. Audit data has clear limitations, but if used effectively and appropriately, it contains valuable data that can be mined to better understand forced labour risk.

Acknowledgements

We are grateful to the companies that have provided data for their trust and ongoing support. We would also like to thank The Mekong Club’s member companies and wider team for their input.

⁵⁴ Hannah Thinyane, Silvia Mera, 2020. “Amplifying workers' voices through technology to uncover modern slavery: Report on Supply Chain Compliance”, accessed June 10, 2021, <https://compliancecosmos.org/amplifying-workers-voices-through-technology-uncover-modern-slavery>