Digital Technologies for Worker Voice and Their Contribution to Social Dialogue

Michael Gallo, Hannah Thinyane

United Nations University Institute in Macau
michael.gallo@unu.edu, hannah@unu.edu

Abstract

The widespread innovation and adoption of digital technologies has profoundly transformed the world of work and labour relations, with a myriad of positive and negative consequences. While technological developments have underpinned globalization and its related social, political, and economic forces that have threatened labour rights and efforts at unionization, technology simultaneously offers new methods for capturing feedback from workers and contributing both procedurally and substantively to social dialogue. Worker voice technologies have emerged in recent years to amplify collective voice in supply chains and reach workers and workplaces that have historically been ignored and are not guaranteed rights to freedom of association and unionization. While technology presents promising opportunities for achieving scale and impact, overreliance on technocentric solutions may in fact undermine strong social dialogue and create new risks to worker's rights. In this paper we discuss the strengths and weakness of worker voice tools and platforms, as well as their implications for social dialogue and collective voice. We further present key findings and case studies from the development and implementation of an innovative, multilingual mobile application called Apprise Audit that has been used by multinational corporations undertaking worker interviews as part of social compliance auditing.

Background: Overview of Social Dialogue's Objectives, Activities, and Forms

The International Labour Organization (ILO) promotes social dialogue as a crucial mechanism for improving labour relations and addressing challenges in the governance of work. By definition, social dialogue includes "all types of negotiation, consultation and exchange of information between, or among, representatives of government, employers and workers, on issues of common interest related to economic and social development" [1, p. 2]. The definition of social dialogue includes aspects of negotiation (principally in the form of collective bargaining to reach binding agreements); consultation (for exchanging views or reaching consensus on specific issues); and general information sharing (which implies no action on issues concerned) [2]. In practice, this can occur across multiple levels: at the tripartite national level between governments, employers and unions; at the bipartite sectoral level between employers and unions; or at the workplace level between employees and employers [3]. Social dialogue may be institutionalized in the form of working groups, committees, or boards, it may be entirely informal and ad hoc, or it may be a combination of the two. It can take a narrow approach to labour relations issues, discussing specific conditions and rights at work, or adopt a focus on these same issues within a wider social and economic context. The intentionally broad working definition reflects the wide range of processes and practices that can be found across different contexts and the fact that there is no "one-size-fits-all" approach.

The ILO describes a set of necessary enabling conditions for social dialogue as the following: strong, independent workers' and employers' organizations with the technical capacity and the access to relevant information to participate in social dialogue; political will and commitment of participants; institutional support; and importantly, respect for the fundamental rights of freedom of association and collective bargaining [4]. Successful social dialogue has the potential to encourage good governance and plays a practical role in promoting compliance with international labour standards, improving working conditions, and ensuring decent work. Social dialogue contributes to economic prosperity and social protection across a range of targets included in the 2030 Agenda for Sustainable Development but is most specifically related to Target number 8.8[1] under Goal 8, Decent Work and Economic Growth. Constituting one of the four pillars of the ILO's Decent Work Agenda[2], social dialogue has been described as facilitating social and economic progress by giving individuals a voice and stake in their societies and workplaces.

Worker Voice: Historical Origins and Contemporary Understanding

"Worker voice", has been characterized in a variety of ways over time, and discussed through different disciplinary lenses. The concept can be traced to the organized labour movements of the late 1800s, with labour unions serving as the primary conduit for worker voice ever since, through their functions of freedom of association and collective bargaining [5]. For most of the 20th century, worker voice was synonymous to worker representation through formalized structures of industrial relations. Resultantly, much of the labour relations literature across time has predominantly focused on unions as a type of collective voice. However, recent research has shifted towards a broader understanding of worker voice and critical examination of the

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[1] Target 8.8. "Protect labour rights and promote safe and secure working environments for all workers, including migrant workers, in particular women migrants, and those in precarious employment

[2] The Decent Work Agenda was developed in 1999 by the ILO around four pillars: employment creation, rights at work, social protection and social dialogue

different forms it can take, as well as the dimensions that may facilitate or inhibit it. Hirschman [6] provided an early conceptualization and generic definition of voice as an effort to change the behavior of a higher authority. Labour relations scholars have adapted the notion of voice depending on their frame of reference for understanding the interests within an employment relationship. For example, a pluralist tradition of employment relations recognizes employers and workers as having shared and conflicting interests, and that workers should have the right and ability to assert their interests to positively influence their working conditions. Worker voice under this classification then includes a mix of individual and collective efforts to improve organizational processes and assert workers interests that are at odds with an employer's interests [7]. A more recent definition from the OECD describes worker voice as "the various institutionalized forms of communication between workers and managers to address collective problems" [8, p. 16]. Its further notes that there are two main forms of voice: direct (mechanisms that allow direct communication with management) and representative (where voice is mediated through representative institutions, such as trade unions, workers councils and workers' representatives) [8]. The key difference between direct and representative forms of voice are the legal rights and protections that are afforded, particularly protection against retaliation and rights to consultation and information sharing [8].

The fragmented nature of modern supply chains undermines and limits opportunities for both unionized collective voice and other forms of non-unionized social dialogue [9]. Accelerated globalization over the past few decades has shifted production networks to locations wherever labour costs are the lowest, which has consequently eroded worker's rights through downward competitive pressures to optimize profit and attract foreign capital by relaxing rules and regulations [10]. Major brands manufacture or source many of their products from countries whose institutional enforcement of labour rights is weak and national circumstances fail to meet the basic enabling conditions for successful social dialogue [11]. For example, an estimated two-thirds of the global workforce are not legally afforded basic protections for freedom of association and collective bargaining [12]. Over the past decade, new transnational regulatory initiatives and national legislation[3] have pressured and required private companies to address the underlying risks and occurrences of labour exploitation throughout their extensive supply chains. This entails understanding the conditions faced by workers in many contexts where their collective voice through unionization and other formal structures of social dialogue either does not exist or is not respected. Many private compliance initiatives now broadly refer to 'worker voice' as the process of enabling and supporting workers to exercise their rights, while simultaneously acknowledging the realities such as an absence of unionization, that constrain the practical application of these rights [13]. As such, improvements to workplace social dialogue and the strengthening of worker voice have gained prominence as a type of sustainable business model intervention.

Social Compliance Auditing, Digital Technologies, and Worker Voice

The United Nations Guiding Principles for Business and Human Rights (UNGPs) outlined the responsibility of corporations to respect human rights in their supply chains and to conduct due diligence to identify, prevent, and mitigate adverse human rights impacts [14]. As part of their

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[3] Examples include the 2011 UN Guiding Principles on Business and Human Rights; OECD Guidelines for Multinational Enterprises; California's 2010 Transparency in Supply Chains Act; the UK's 2015 Modern Slavery Act; the 2017 French Duty of Vigilance Law; and Australia's 2018 Modern Slavery Act.

efforts to fulfill this obligation, multinational corporations (MNCs) have increasingly turned to the private auditing regime, sometimes interchangeably referred to as 'ethical auditing' or 'social compliance auditing', to evaluate the social and environmental impacts of their operations. Private audits can take many different forms, but generally can be described as a process of collecting, analyzing, and reporting on data to monitor compliance with an agreed upon code of conduct / legal framework. Social audits can be performed internally by a company's own employees, or an external professional services company. Auditing has rapidly become the global norm for corporate governance on labour standards compliance, with companies typically devoting up to 80% of their ethical sourcing budget for the task [15].

Many of the worst industrial accidents over the past decade, such as the 2013 Rana Plaza building collapse that killed more than 1,100 garment workers in Bangladesh, have occurred in factories that were recently audited [16]. A growing body of research documents the structural limitations of audits and critiques their efficacy in reducing decent work deficits, due to a lack transparency, widespread rumors of fraud, and their inability to capture sensitive labour violations [17]. One of the major flaws of audits is a lack of meaningful worker engagement, with many initiatives failing to include workers and their representatives at all in the auditing procedures [18]. When workers are in fact interviewed, time pressures placed on the auditors can undermine the genuine inclusion of worker voice, as rushed interviews may only gather surface-level feedback from workers [19]. In some cases, companies consider these interviews as a 'tick-box exercise' showing little interest for hearing worker voice or improving working conditions [20]. However, some programs are explicitly trying to move beyond an auditing and corrective action approach, towards workplaces where issues are raised and addressed through open channels of communication [21]. Meaningful change cannot be brought about through just externally driven audits, but needs to incorporate voice from within the workplace. At the enterprise level, constructive dialogue surrounding issues identified through social audits can help to promote the prevention and resolution of disputes between workers and employers. Research has recommended that social dialogue be layered within social auditing to best create a mutually reinforcing approach to industry governance [22].

Worker Voice Tools: A Threat or Breakthrough for Collective Voice?

As part of the contemporary discourse on supply chain management and exploration of new forms of worker voice, the term itself has shifted to become almost synonymous with 'worker voice technology'. Worker voice has recently been framed as a technology-enabled approach to responsible sourcing with the potential collect more and better data for supply chain due diligence and to empower workers [23]. Over the past few years, a wide range of digital reporting tools have proliferated, offering businesses the ability to detect potential labour violations by engaging directly with workers through mobile-phone applications, SMS, hotlines, and social media platforms, enabling workers to confidentially communicate their needs, working conditions, and experiences. These tools emerged in part in response to the failings and shortcoming of social auditing mentioned above and to capitalize on technology's innovative potential to reach more workers and workplaces. Worker voice tools generally operate using a one-way model, collecting data and responses from workers through surveys or a two-way channel of communication where educational information on occupational health safety and labour rights is also shared and grievance mechanisms are supported. Industry

guidelines have been established alongside these new tools themselves to support the development of solutions that can best mitigate risks and deliver benefits to workers[4].

Some of the major advantages afforded by these disruptive technologies have been described as collecting data from workers in a more cost-effective, efficient, and scalable fashion; extending mechanisms into hard-to-reach environments in remote locations and lower tiers of supply chains; rapid and continuous engaging for monitoring crisis situations like COVID-19; and generating large data sets that can offer deeper insights into patterns and trends of exploitation change over time [24]. Technology can also enable confidential means of disclosing sensitive information like sexual or physical abuse and can enhance the inclusivity of vulnerable or marginalized populations [25]. Independent digital grievance channels allow workers to anonymously raise concerns or queries in response to changes in their working environment. When combined with a clear operational strategy for how the data will drive decision-making, worker voice platforms can be optimized to affect responsible sourcing and relationships with suppliers. By enabling more frequent and consistent engagements over time, they can ensure the continuous participation of workers and capture their inputs more frequently than just a snapshot in time during an audit. The empowerment of more workers to use their voice helps to increase the legitimacy of formal rules and promotes informal norms of adhering to labour standards [26].

Despite these benefits, worker voice tools have also been criticized as being structurally unable to empower workers, because they cannot provide a protected and collective mechanism through which workers can demand improvements in their rights and working conditions without fear of retaliation [27]. Even though technology can offer significant operational improvements to the existing social compliance model, suppliers may still have little incentive to go beyond simply passing their inspection [28]. The dominant supply chain perspective understands issues with working conditions to be to mere technical issues that can be resolved through monitoring and auditing [29]. It is then unsurprising that businesses would readily embrace technology to improve the efficiency of their preferred mechanism of governance. Toyama's amplification theory [30] established that technology is primarily an amplifier of existing institutional forces. Thinyane and Sassetti note that if a worker voice tool is developed for purpose of risk migration and conducting only the bare minimum of mandatory due diligence, then it won't disrupt the status quo, but rather be used as a tool to reinforce it [31]. This follows the critique that the supply chain management approach of social auditing simply serves to make unsustainable practices and models less unsustainable rather than transitioning towards being truly socially impactful [32].

Structural factors and power imbalances within supply chains often silence vulnerable workers voices. Technology alone is not able to overcome these imbalances to amplify collective voice [33]. On top of this, engaging with workers is not equivalent to truly enabling worker voice or promoting social dialogue. Practitioners such as Heuty note the problematic nature of conflating the of use technology and amplifying voice, as there is no cause and effect relationship that has been established between the two [34]. Interestingly, some platforms have chosen to drop the term 'worker voice' not necessarily because of this problematic conflation,

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[4]A group of major technology providers in this space jointly established the WEST principles in 2017 (Worker Engagement Supported by Technology); https://westprinciples.org/

but rather "because it implies a passive role" [35, p. 1]. This would stand in contrast to historical precedent that frames voice as a very active construct in the context of organized labour.

Using technology to collect data also introduces new and complex sets of risks and potential harms for vulnerable populations when deployed without appropriate safeguards in place. Despite its empowering potential, the use of new technologies raises urgent questions surrounding data integrity, privacy, security and access to remediation [36]. Even if collected with the best of intentions, if not properly anonymized, data could potentially reveal either a worker's identity or location and may put them at risk of retaliation from an abusive employer or manager. For these tools to be successful, workers must feel they can speak openly about their experiences without repercussions and businesses must ensure action is taken based upon the information shared [37]. If a worker voice tool is not built into some form of accountability mechanism, then a worker may share information about violations that have taken place expecting that something will be done to resolve this, only to find no resolution for their grievance. One recommended way to manage this risk is to make sure that local stakeholders, including public authorities, are engaged with technology interventions to so they are responsive and able to make a positive impact [38]. Unfortunately, many worker voice technologies only serve one-way data collection purpose, rather than feeding into structures and processes of dialogue, and this can erode the trust workers have in engagement and make them skeptical of tech solutions [34].

There is a need to build the capacity of both workers and employers to engage in social dialogue and provide meaningful mechanisms for workers' collective voice [22]. There are many different solutions for strengthening worker voice, and while technological advances continue to offer refinements and new ways to collect data, it should not be the only component of a strategy for dialogue and engagement. A robust human rights due diligence framework requires companies to consistently and proactively engage directly with workers and their representatives [39]. Over reliance on technology may ultimately undermine unions and other forms of social dialogue if workers perceive that they should channel concerns only through worker voice tools [40]. The promising advantages offered by technology often lead to it being thought of as a standalone solution, rather than a tool to accelerate and amplify (offline) systematic changes. Worker voice tools are not substitutions for unionization but should be used to support the work of trade unions advocating for collective action and help empower workers by serving a complementary role embedded within social dialogue. It has been recommended that any worker voice technology should engage with local trade unions to ensure the questions are tailored to the target population and the findings can be contextualized to provide companies with the most appropriate recommendations [35].

Social dialogue and technology are most often discussed in tandem when elaborating on the role social dialogue can play in mitigating the adverse impacts of new technological trends such as automation, artificial intelligence, and digitalization on labour markets and workers [41]. However, limited research has explored the role new technologies can play a role in contributing both procedurally and substantively to effective social dialogue in global supply chains. Assuming that the trends of auditing as a governance standard and the increased adoption of technology within this framework continue, worker voice tools will play an important role in shaping how employees can make their grievances heard and provide actionable feedback to employers that contributes to improved conditions. In the next section we share findings from the development, piloting, and impact evaluation of an innovative,

multilingual tool called Apprise Audit that has been used by MNCs to screen for indicators of labour exploitation in their supply chains as a case study of technology-enabled collective voice.

Apprise Audit

Starting in mid-2018, a series of key stakeholder interviews were conducted with private sector representatives including supply chain experts, auditors, and brand representatives to gain insights into the current challenges they face in conducting social audits and what role they believed technology could play in overcoming them. The findings from these interviews pointed to a need to conduct more private, inclusive, frequent, and consistent interviews and informed the initial design and development of Apprise Audit. Apprise Audit is a mobile phone-based screening tool that supports auditors in conducting worker interviews and gives workers a confidential way to voice concerns by responding to an audio questionnaire.

Apprise Audit is first downloaded onto an auditor's phone or tablet, where they input a factory identifier code, collating worker responses by work site. The auditor then passes the phone, along with a set of headphones to a worker. The worker then selects a from a list of flags and language names and following their selection, instructions are giving to proceed (Figure 1(a)). The application currently supports 15 South Asian and Southeast Asian languages and dialects, as well as Amharic and English. Next, an introductory video is played which states the purpose of the interview, how to navigate the interface, and asks for consent to continue (Figure 1(b)). If consent is provided, Apprise Audit then cycles through the question list in the workers preferred language for which they can respond "yes"; "no"; "I don't know" (Figure 1(c)). The question lists were developed through an extensive consultative process and are aligned to ILO's indicators of forced labor. Once the interview is finished, workers are given the option of leaving contact information if they wish to be contacted regarding issues they raised. At the end of a session, interview responses are summarized for the auditor, providing an overview of any issues raised by a worker (Figure 1(d)). This information can be used to inform further on-site investigations. When network connectivity is next available, responses are then uploaded to a content analysis system to support post-hoc analysis of responses through a combination of filters and map-based visualizations.
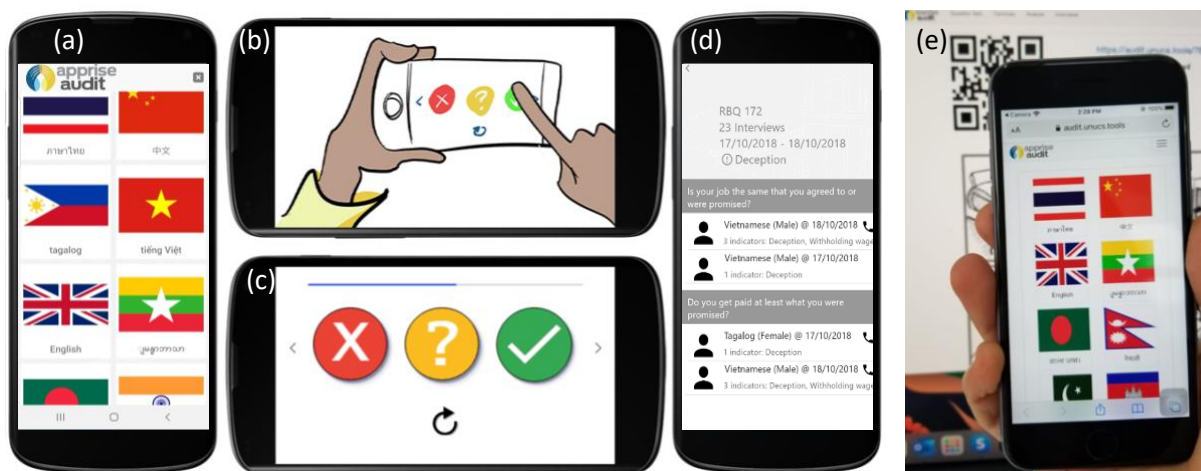

Figure 1: Apprise Audit (a) language selection (b) introductory video (c) questions (d) summary of responses and (e) Apprise Audit Remote from QR code

COVID-19 has had a significant impact on social auditing including travel restrictions between and within countries. In response to requests from MNCs we partner with, new COVID-19 questions were added, and a new modality was created to enable self-reporting direct worker feedback as a data collection method. An MNC can send a QR code (with instructions for use in the form of a text-free comic, and a URL) to each factory that will participate in remote audits. Factory staff are required to post the printed sheet in a surveillance-free environment, where workers have direct access to their personal mobile devices. Workers then scan the QR code (or enter the link provided on the page- Figure 1(e)) which navigates directly to a web-based frontend to the Apprise Audit questioning system. This enables workers to undertake interview themselves, on their own mobile device, and uploads responses to the brand's existing Apprise Audit account. Many worker voice platforms have been adapted in similar fashion and companies have increasingly relied on remote data collection enabled through technology throughout the pandemic [42].

Findings and Discussion

In the following section we draw on research activities undertaken to assess the impact that Apprise Audit has had since its launch in mid-2018, in order to summarize key finding and describe the tool's direct and indirect linkages to worker voice and social dialogue. These research activities include a baseline assessment with 185 auditors from different organizations that conduct social audits across the Asia-Pacific region [43], field observations and direct worker feedback [31], an impact assessment [44], and semi-structured expert interviews [45] that informed the remote data collection extensions to Apprise Audit.

Perceptions of Technology and Gaps in Current Practices

One of the main findings from our auditor survey was that 92% of respondents thought technology could be useful in helping them to assess working conditions [43]. Auditors perceived that technology could make the evaluation of conditions during an audit more efficient, objective, and transparent, particularly through the systematic collection of data from workers in a reliable and replicable manner. More than 50% of auditors in the survey reported not having a consistent methodology for collecting and storing data or deciding which cases to follow up on according to relevant procedures. Apprise Audit helps to address this deficit by organizing all responses into a high-level summary to inform further on-site investigations. It also supports auditors to dig deeper into specific violations and understand how trends and patterns in feedback shift over time through the backend content management system. These data-driven insights can help with monitoring and evaluation of how workplace conditions change in response to new policies or programs initiated through social dialogue. This can potentially pinpoint conditions that require further attention, and to identify best practices by understanding what has worked well. From our survey sample, only 12% of auditors reported exclusively conducting individual interviews, while an overwhelming majority used a group format [43]. Auditors also noted that when using a group format, workers were often hesitant to disclose sensitive details about their work situation. By using multiple devices, auditors can privately interview multiple workers at the same time, each in their preferred language, thereby increasing the scope of voices captured. Apprise Audit provides further time-saving gains for auditors, allowing them to conduct a greater number of individual interviews with a more representative sample of workers and to do so in a standardized manner.

Enhancing inclusivity and privacy

Language barriers were consistently raised as one of the major challenges faced by auditors, most especially in sectors that rely heavily on migrant workforces. If no translator or local auditor is available, communication difficulties often means that only workers who share a common language were selected for interviews, excluding the feedback of those perhaps at greatest risk of exploitation [43]. Most auditors indicated they select workers on the basis on having a common language and frequently encounter language barriers with migrant workers. However, only 4% of our survey sample reported attempting to use a translation service, such as Google translate, to try and assist with communication. Apprise Audit is not a live translation tool, but instead relies on pre-recorded and verified audio clips that undergo a rigorous screening process to ensure their accuracy, clarity, and phrasing. These recordings use vernacular (rather than legal terminology) to ensure they are understood by the target demographic. Undertaking an interview in their own language help workers to raise grievances which can then be further investigated by an auditor. The Apprise Audit system was purposefully designed for rapid scalability and replicability for deployment in new sectors and with new languages through a straightforward addition of translations and questionnaires. When field testing Apprise Audit, many of the workers who were ethnic or linguistic minorities that were interviewed shared that it was the first time anyone had ever asked them about their working conditions, even though they had been working in factories subject to audits for a long time.

Direct and Indirect Role in Social Dialogue

Our findings indicate that data collected during social audits through worker voice technologies is likely best positioned to make an impact when embedded within existing structures and processes of social dialogue at the workplace level. Although technology by itself cannot create and sustain trusted relationships between employers and employees, it can help to amplify the concerns of workers and provide evidence for a starting point of negotiation, consultation, or information sharing purposes during already institutionalized dialogue. When asked about the main impact of Apprise Audit, brand representatives have shared how arguably its greatest contribution has been supporting existing channels of communication between factory management, workers, and brands. Social auditing firstly helps to identify the issues that are in most urgent need of being addressed and then social dialogue provides the platform for resolution. Social auditing and social dialogue are complimentary and when properly implemented, mutually reinforcing tools. For example, in cases where issues were raised during interviews, auditors described first arranging follow-up meetings with factory management where they specifically discussed the results obtained through Apprise Audit. Then, worker groups were invited to meetings with both factory management and the audit team to provide an opportunity for workers to more directly voice their concerns that were first raised through the application. Here we see that the tool enabled different elements of social dialogue including information sharing (results of interviews) and consultation (worker representative meetings). Best practice for brands contributing to social dialogue includes being transparent and sharing audit results with factory management [22]. In our impact assessment, 86% of respondents indicated Apprise Audit gave them a better understanding of working conditions and 100% said it allows them to make more informed and targeted recommendations to factory management [44].

Responses provided through Apprise Audit also helped to offer clarification and redress for a number of occupational health and safety issues through information sharing on sensitive topics. Compared to in-person interviews, our endline assessment revealed that local workers, migrant workers, and females all felt more comfortable answering sensitive questions when using Apprise Audit [44]. For example, workers in several factories in Thailand reported being required to take a pregnancy test as part of their pre-employment health screening. The auditor who uncovered this issue then discussed with factory management, who shared that forced pregnancy tests were not imposed by factory policy, but rather often done by recruitment agencies who impose their own tests on workers. As a result, it was recommended that the factory make it explicitly clear that female workers should not be subjected to pregnancy testing as a precondition of recruitment or employment. In another example, several workers in a factory in Malaysia were reporting restrictions on their freedom of movement, usually an indicator of potential serious labour violations like forced labour. However, upon further investigation, communication between the auditor, management team, and workers committees revealed that the harsh restrictions were made in response to government imposed COVID-19 measures and they were simply following protocol [45]. Brands further described how remote data collection through Apprise Audit allowed them to understand how worker wellbeing and management practices changed since the pandemic began, and to prioritize focused communication and mutual understanding.

Conclusion

New technologies such as mobile phones have transformative potential to empower workers to make their voices heard in innovative ways. Technology is very useful for new channels of *direct* worker voice by supporting digitally mediated mechanisms for communication with management, however technology by itself cannot enable the more impactful *representative* voice, where voice is mediated through institutions. It is important to note that although worker voice technologies have advantages in achieving scale for data collection, they are not a replacement for more traditional forms of worker voice such as union mediated negotiations and collective bargaining. Despite their limitations, technology solutions can be used to support social dialogue by amplifying the collective voice of workers throughout global supply chains. As evidenced through our findings with Apprise Audit, worker voice technology can enhance the privacy and inclusivity of interviews during social audits and overcome communication barriers to enable workers to disclose exploitative working conditions. Increasing investment in technology-enabled worker voice should go hand in hand with measures to protect freedom of association and unionization, otherwise there is a risk of undermining the power of organized labour.

References

[1] ILO, "Social Dialogue: Finding a Common Voice," n.d. Accessed: Jan. 25, 2021. [Online]. Available: https://www.ilo.org/public/english/dialogue/download/brochure.pdf

[2] ILO, Social Dialogue and Tripartism Unit, Governance and Tripartism Department, "National tripartite social dialogue: an ILO guide for improved governance," Geneva, 2013. Accessed: Apr. 28, 2021. [Online]. Available: https://www.ilo.org/wcmsp5/groups/public/---ed_dialogue/---dialogue/documents/publication/wcms_231193.pdf

[3] J. Ishikawa, *Key Features of National Social Dialogue: a Social Dialogue Resource Book*. Geneva: International Labour Office, 2003.

[4] ILO, "Social dialogue and tripartism," n.d. https://www.ilo.org/global/topics/workers-and-employers-organizations-tripartism-and-social-dialogue/lang--en/index.htm (accessed Apr. 28, 2021).

[5] Issara Institute, "What is 'Worker Voice' in the Context of Global Supply Chains?"

[6] A. O. Hirschman, *Exit, Voice, and Loyalty: Responses to Decline in Firms, Organizations, and States*. Harvard University Press, 1970.

[7] T. A. Kochan, D. Yang, W. T. Kimball, and E. L. Kelly, "Worker Voice in America: Is There a Gap between What Workers Expect and What They Experience?," *ILR Rev.*, vol. 72, no. 1, pp. 3–38, Jan. 2019, doi: 10.1177/0019793918806250.

[8] OECD, *Negotiating Our Way Up: Collective Bargaining in a Changing World of Work*. Paris, 2019. Accessed: May 14, 2021. [Online]. Available: https://doi.org/10.1787/1fd2da34-en

[9] L. Riisgaard and N. Hammer, "Prospects for Labour in Global Value Chains: Labour Standards in the Cut Flower and Banana Industries," *Br. J. Ind. Relat.*, vol. 49, no. 1, pp. 168–190, 2011, doi: https://doi.org/10.1111/j.1467-8543.2009.00744.x.

[10] N. Rudra, *Globalization and the Race to the Bottom in Developing Countries: Who Really Gets Hurt?* Cambridge: Cambridge University Press, 2008. doi: 10.1017/CBO9780511491870.

[11] O. Mehmet, "Race to the Bottom: the Impact of Globalization on Labor Markets — a Review of Empirical and Theoretical Evidence," in *Globalization and the Third World: A Study of Negative Consequences*, B. N. Ghosh and H. M. Guven, Eds. London: Palgrave Macmillan UK, 2006, pp. 148–161. doi: 10.1057/9780230502567_9.

[12] A. Alpman, G. Cohen, and F. Murtin, "Social dialogue in the 2030 Agenda," n.d.

[13] KnowTheChain, "Three Sectors, Three Years Later: Progress and Gaps in the Fight Against Forced Labour," 2019. Accessed: Apr. 27, 2021. [Online]. Available: https://knowthechain.org/wp-content/uploads/KTC_Cross_sector_2019.pdf

[14] OHCHR, "UN Guiding Principles on Business and Human Rights," 2011. Accessed: May 14, 2019. [Online]. Available: https://www.ohchr.org/documents/publications/GuidingprinciplesBusinesshr_eN.pdf

[15] J. Reinecke, J. Donaghey, N. Bocken, and L. Lauriano, "Business Models and Labour Standards: Making the Connection," *Mak. Connect.*, p. 52, 2019.

[16] J. Siddiqui and S. Uddin, "Human rights disasters, corporate accountability and the state: Lessons learned from Rana Plaza," *Account. Audit. Account. J.*, vol. 29, no. 4, pp. 679–704, Jan. 2016, doi: 10.1108/AAAJ-07-2015-2140.

[17] G. LeBaron and J. Lister, "Ethical Audits and the Supply Chains of Global Corporations," Sheffield Political Economy Research Institute, Sheffield, UK, SPERI Global Political Economgy Brief, Mar. 2017. Accessed: Mar. 31, 2017. [Online]. Available: http://speri.dept.shef.ac.uk/wp-content/uploads/2016/01/Global-Brief-1-Ethical-Audits-and-the-Supply-Chains-of-Global-Corporations.pdf

[18] I. M. Kelly, C. Miedema, B. Vanpeperstraete, and I. Winterstein, "Fig Leaf for Fashion: How social auditing protects brands and fails workers," Clean Clothes Campaign, File, Sep. 2019. Accessed: Oct. 02, 2019. [Online]. Available: https://cleanclothes.org/file-repository/figleaf-for-fashion.pdf/view

[19] Clean Clothes Campaign, "Looking for a quick fix - How weak social auditing is keeping workers in sweatshops," Clean Clothes Campaign, The Netherlands, 2005. Accessed: Mar. 15, 2021. [Online]. Available: https://core.ac.uk/download/pdf/144977443.pdf

[20]   R. M. Locke, *The Promise and Limits of Private Power: Promoting Labor Standards in a Global Economy*. Cambridge: Cambridge University Press, 2013. doi: 10.1017/CBO9781139381840.

[21]   Fair Wear Foundation, "Workplace social dialogue in Myanmar: experiences and lessons learned," 2019. Accessed: Apr. 26, 2021. [Online]. Available: https://api.fairwear.org/wp-content/uploads/2019/12/Myanmar-Social-Dialogue-Report-WEB-DEF-A5.pdf

[22]   J. Reinecke, J. Donaghey, and D. Hoggarth, "From social auditing to social dialogue: Implementing Workplace Social Dialogue in the Bangladesh Garment Industry," p. 32, 2017.

[23]   L. Rende Taylor and E. Shih, "Worker feedback technologies and combatting modern slavery in global supply chains," *J. Br. Acad.*, vol. 7, pp. 131–165, 2019, doi: 10.5871/jba/007s1.131.

[24]   L. Berg, B. Farbenblum, and A. Kinitominas, "Addressing Exploitation in Supply Chains: Is technology a game changer for worker voice?," *Anti-Traffick. Rev.*, no. 14, pp. 47–66, Apr. 2020, doi: https://doi.org/10.14197/ atr.201220144.

[25]   Laborlink, "Unlocking Worker Voice Using Technology," *Medium*, May 09, 2017. https://medium.com/laborlink-insight/unlocking-worker-voice-using-technology-d261af6c32b5 (accessed May 04, 2021).

[26]   ILO, "Workplace Compliance in Global Supply Chains," 2016. Accessed: Jan. 08, 2021. [Online]. Available: https://www.ilo.org/wcmsp5/groups/public/---ed_dialogue/---sector/documents/publication/wcms_540914.pdf

[27]   P. Kyritsis, G. LeBaron, and M. Anner, "New buzzword, same problem: How 'worker voice' initiatives are perpetuating the shortcomings of traditional social auditing," *Business & Human Rights Resource Centre*, 2019. Accessed: Apr. 30, 2021. [Online]. Available: https://www.business-humanrights.org/en/blog/new-buzzword-same-problem-how-worker-voice-initiatives-are-perpetuating-the-shortcomings-of-traditional-social-auditing/

[28]   Human Rights Center, "Technology Solutions for Advancing Human Rights in Global Supply Chains: A Landscape Assessment," 2019.

[29]   J. Reinecke and J. Donaghey, "Towards Worker-Driven Supply Chain Governance: Developing Decent Work Through Democratic Worker Participation," *J. Supply Chain Manag.*, vol. 57, no. 2, pp. 14–28, 2021, doi: https://doi.org/10.1111/jscm.12250.

[30]   K. Toyama, "Technology as amplifier in international development," in *Proceedings of the 2011 iConference*, Seattle, Washington, 2011, pp. 75–82. doi: 10.1145/1940761.1940772.

[31]   H. Thinyane and F. Sassetti, "Digital Technology for Unmasking Labour Exploitation in Supply Chains," in *The Future of Digital Work: The Challenge of Inequality*, Cham, 2020, pp. 267–280. doi: 10.1007/978-3-030-64697-4_20.

[32]   M. Pagell and A. Shevchenko, "Why Research in Sustainable Supply Chain Management Should Have No Future," Social Science Research Network, Rochester, NY, SSRN Scholarly Paper ID 2323369, Sep. 2013. Accessed: Apr. 30, 2021. [Online]. Available: https://papers.ssrn.com/abstract=2323369

[33]   Electronics Watch, "Worker Voices: From Talk to Action," n.d. Accessed: Apr. 30, 2021. [Online]. Available: https://electronicswatch.org/electronics-watch-policy-brief-2-worker-voices-from-talk-to-action_2557139.pdf

[34]   A. Heuty, "Is 'worker voice' technology more than just kabuki theatre in the struggle for labour rights?," 2019. Accessed: Apr. 30, 2021. [Online]. Available: https://www.business-humanrights.org/en/blog/is-worker-voice-technology-more-than-just-kabuki-theatre-in-the-struggle-for-labour-rights/

[35]   Proforest, "Worker Voice Technologies," 2020. Accessed: Apr. 30, 2021. [Online].
        Available:
        https://www.proforest.net/fileadmin/uploads/proforest/Documents/Publications/InfoNote
        _Worker_Voice_Technologies.pdf

[36]   L. Rende Taylor and M. Latonero, "Updated guide to ethics and human rights in anti-
        human trafficking," Issara Institute, Bangkok, Thailand, 2018. [Online]. Available:
        https://www.antislaverycommissioner.co.uk/media/1207/guide-to-ethics-and-human-
        rights-in-anti-human-trafficking.pdf

[37]   L. Haworth, "When worker voice is next on the agenda: How to make worker voice
        tools work for your organization," *Ulula*, 2019. https://ulula.com/when-worker-voice-is-
        next-on-the-agenda-how-to-make-worker-voice-tools-work-for-your-organization/
        (accessed May 05, 2021).

[38]   West Principles, "White Paper: Realizing the Benefits of Worker Reporting Digital
        Tools," Mar. 2019. Accessed: Apr. 12, 2019. [Online]. Available:
        https://westprinciples.org/wp-content/uploads/2019/03/west_principles_white_paper-
        realizing_the_benefits_of_worker_reporting_digital_tools.pdf

[39]   Ethical Trade Initiative, "Human Rights Due Diligence Framework," n.d. Accessed:
        May 20, 2021. [Online]. Available:
        https://www.ethicaltrade.org/sites/default/files/shared_resources/eti_human_rights_due_d
        iligence_framework.pdf

[40]   OECD, "Monitoring Labor Risks Through Technology," 2020. Accessed: Mar. 09,
        2021. [Online]. Available: https://mneguidelines.oecd.org/OECD-Garment-Forum-2020-
        Session-Note-Monitoring-Labour-Risks-Through-Technology.pdf

[41]   R. Muñoz de Bustillo Llorente, *Digitalization and social dialogue: challenges,
        opportunities and responses*. 2020.

[42]   BSR, "Digital Technology and Data in the Garment Supply Chain during COVID-
        19," 2021.

[43]   H. Thinyane, S. Mera, and F. Sassetti, *Unmasking Labor Exploitation Across Supply
        Chains*. United Nations University Institute on Computing and Society, 2019. Accessed:
        Sep. 17, 2019. [Online]. Available: https://collections.unu.edu/view/UNU:7351#stats

[44]   F. Sassetti, S. Mera, and H. Thinyane, *Apprise Audit Impact Assessment: Detecting
        Labour Exploitation in Supply Chains*. United Nations University, 2019. Accessed: Sep.
        17, 2019. [Online]. Available:
        https://docs.wixstatic.com/ugd/c9f85b_444675bbb94d4f06b19d6f2594ff098d.pdf?index=
        true

[45]   H. Thinyane and M. Gallo, "Pivoting technology: understanding working conditions
        in the time of COVID-19," *Jounral Mod. Slavery*, vol. 5, no. 2, 2021, [Online].
        Available: https://slavefreetoday.org/journal-of-modern-slavery-volume-5-issue-2-2021/