



USING BLOCKCHAIN TO COMBAT MODERN SLAVERY

Intro

Blockchain first entered public awareness as the technology underpinning the cryptocurrency Bitcoin. Whilst the longevity of Bitcoin remains uncertain, and governments and financial institutions alike are cautious in their acceptance of cryptocurrencies, the same cannot be said for blockchain technology, the application of which is being widely explored across industries and institutions.

This booklet introduces blockchain technology, and the various ways in which it is being applied in the fight against modern slavery.

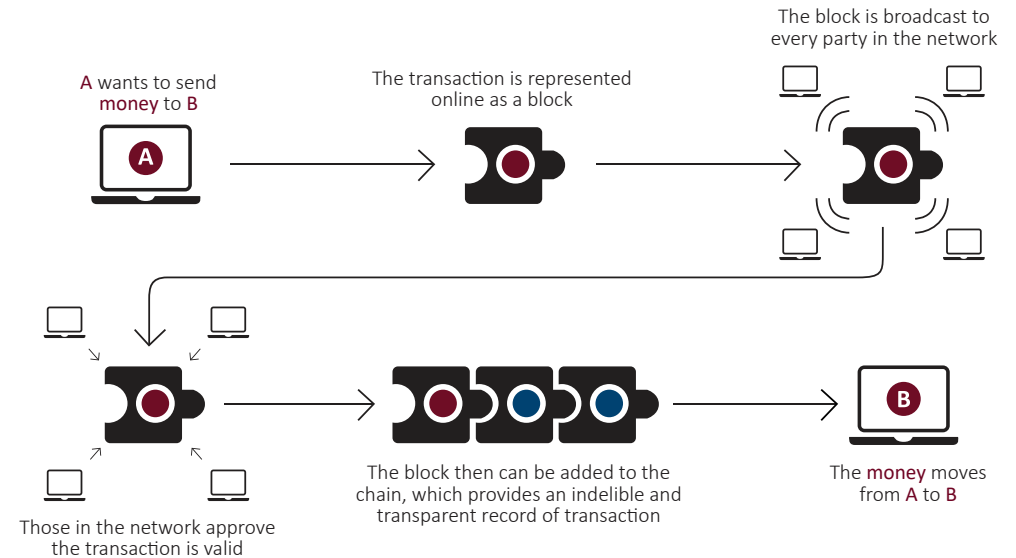


What Is Blockchain?

Blockchain is essentially a decentralised, cryptographically secured, immutable database that has a wide range of applications beyond the world of cryptocurrencies and finance. Blockchain technology enables users to make transactions or share data without the need for an intermediary. All transactions are broadcast to the entire network and verified by users within the network. Consensus is reached using complex cryptography and records are locked into the blockchain by being 'chained' to the previous block. It is impossible for one party to add information to the chain without the consensus of the group, and all records remain on the blockchain unchanged to be viewed by participants at any time.

To illustrate this in simple terms, comparisons are often drawn with choosing between using Google Docs for group collaboration versus emailing Word documents between parties. When using Google Docs, those with permission to view the file are able to each see the same version of the file and make changes in real time, which avoids issues of multiple versions of the same file and also saves time compared to back-and-forth emailing. Similarly, the shared 'ledger' on a blockchain is accessible to all participants and can be updated in real time. Blockchain takes this concept and underpins it with highly sophisticated technology that ensures total immutability of the shared ledger, and thus a permanent record of all changes and transactions made.¹

The following infographic explains at a basic level the process that each transaction goes through before it becomes part of a block on the blockchain. Note that the transactions can range from payments to recording all manner of data and are not limited to monetary transactions, but the same underlying process applies each time a record is made using blockchain technology.



Whilst Bitcoin operates on a public blockchain, whereby anybody can view the transactions taking place on the chain, it is also possible to build private blockchains that are permissioned. These limit the parties who can transact on the blockchain and set who can serve the network by writing new blocks into the chain, so they can be used in trading relationships where data privacy is important.

How Can Blockchain Be Used In Supply Chain Management ?

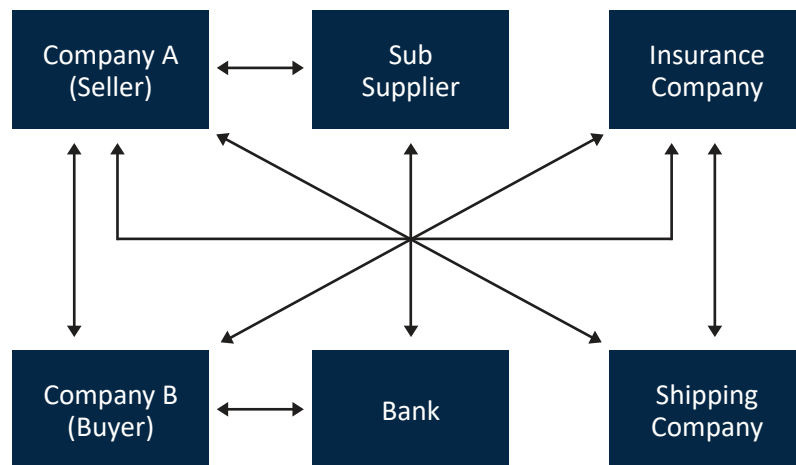
Transparency, trackability, accountability and integrity are all challenges that face any business with a supply chain, and are all areas which proponents of the technology claim that blockchain can improve. For retail companies, if blockchain is used throughout the supply chain, then all parties are able to see the transactions that involve the relevant cargo and are able to track the journey of the cargo on the immutable shared ledger. This could combat issues of fraud and errors, and allows for the real-time tracking of information. By using blockchain technology, the need for cumbersome paperwork processes is removed, which saves time and money, and also reduces the risk of data loss.²

Elements of supply chain management in which blockchain may be used include:

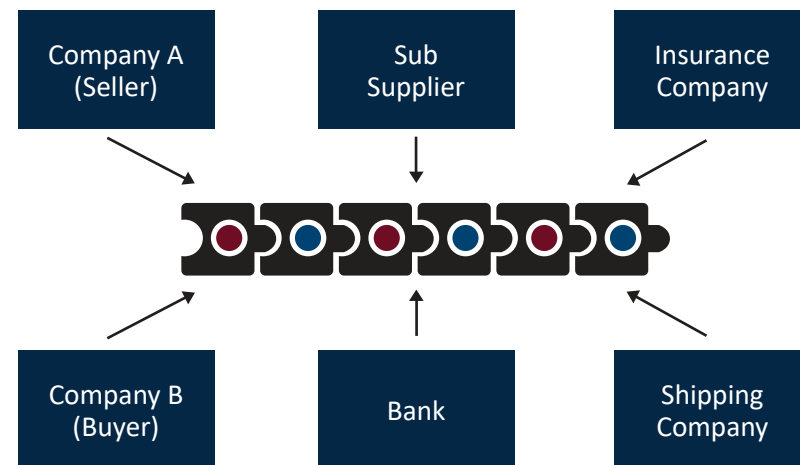
- Purchase orders and agreements for shipment terms between buyers and suppliers
- Financial documentation such as invoices and receipts
- Cargo tracking, certifying that the correct shipments are in the right place at the right time
- Identification of the origin of a product
- Identification of fraudulent or counterfeit product

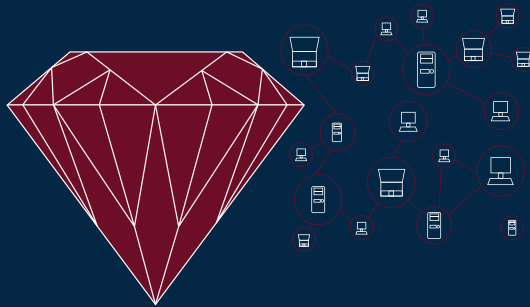
Organisations ranging from NGOs, the United Nations, to multi-nationals and specially dedicated start-up companies are working on ways to utilise the advantages of blockchain technology in tackling modern slavery within supply chains.

REGULAR INFORMATION EXCHANGE



INFORMATION EXCHANGED THROUGH BLOCKCHAIN





Case Study 1: Diamonds

A UK-based company called Everledger³ has placed records of over one million diamonds onto a blockchain. Due to the unique nature of diamonds, each has a 'fingerprint' consisting of qualities such as colour, carat, and a laser-inscribed certificate number. Everledger securely captures the defining characteristics of the diamonds at their source and creates a digital thumbprint that is stored in the blockchain for each one, replacing paper verification documents with a 'digital vault'. This information, which includes history, transport, events and ownership, is relied upon by multiple stakeholders across global supply chains to verify each diamond's authenticity. The end purchaser of the diamond is able to look up the diamond's unique record on the blockchain and examine where the diamond has come from, and the journey that it has taken, including crucially whether the diamond has been verified as free from slave-labour.



Case Study 2: Tuna

The World Wildlife Fund (WWF)⁴ in Australia, Fiji and New Zealand, in partnership with US-based software company ConsenSys, technology implementer TraSeable and tuna fishing and processing company Sea Quest Fiji Ltd, launched a pilot project in January using blockchain to track tuna 'from bait to plate'. The purpose of this project is to combat the modern slavery and human rights abuses that plague the fishing industry, by recording the journey of each tuna fish to ensure that they are not sourced from illegal fishing boats prone to slave labour.⁵

This project uses a combination of radio-frequency identification (RFID) tags and quick response (QR) codes to tag the tuna as they are caught. The code is then recorded on the blockchain, and scanned throughout the tuna's journey to market. It gets a little more complicated when the fish is processed, but the project team is now able to link the QR code tags on the packages of the processed fish with the record of the original fish on the blockchain. The end user may then scan this QR code, and verify that the fish that they are consuming has been caught on a fishing boat that is verified not to be engaged in modern slavery and human rights abuse.

Limitations

Whilst there is clear potential for the use of blockchain technology in tackling modern slavery within supply chains, there are limitations that must be taken into consideration.

One of the key limitations is that the use of blockchain technology to record the journey of a product throughout the supply chain does not inherently remove the possibility that the product was sourced using slave labour. The use of blockchain relies on the integrity of the initial data input to say that the factory, plantation, vessel etc. is legitimate and does not use slave labour. If the individuals who are entering the data at the first instance are corrupt, then there is arguably nothing stopping them from entering information to say that a product is ethically sourced when in fact it is not. Therefore, the use of blockchain technology does not remove the need for proper due diligence and checks to ensure that the source data is legitimate.⁶

Additionally, there is some debate over the use of technology such as QR codes when tracking products on the blockchain, as it is possible to tamper with them or even create copies of the codes. Should a QR code pertaining to an ethically sourced product be replicated, and attached to another, then the end user may be misled as to the source of the product. There are ways to avoid such problems, such as systems that do not allow for multiple QR codes to be scanned in order to flag fake or duplicate codes.

In addition, it can be argued that the success of blockchain technology relies on all parties within the supply chain adopting the approach. If there are large gaps in the supply chain where information is not available on the source of the product and the extent to which ethical labour practices have been employed, then the gaps will remain in the end user's understanding of where the product has come from.

Helping Vulnerable/ Disenfranchised Groups

Use Case 1: Identification

Many citizens in developing nations have no identification or documentation whatsoever, making it impossible for them to transact let alone take refuge in another state. Refugees fleeing from conflict zones without their identification documents may find themselves with no clear citizenship. In the case of human trafficking, lack of documentation makes these people easier to exploit because they're not traced by their governments. Additionally, it is common practice for victims of modern slavery have any identity documentation that they do hold confiscated by their employers as a means to further control their movements and bond them to the workplace.

By creating a 'virtual identity' on the blockchain, using unique biometric information such as fingerprint and iris scans, the need for paper documentation is removed. Additionally, the immutability of the blockchain means that the practice of forging identification in order to illegally transport victims over borders would be made futile. If individuals are able to prove their identities using information on a blockchain that is unchangeable, then the reliance on their physical identity documents is diminished. This means that document confiscation by employers would no longer be a means of control, and it would also reduce the vulnerability of the paperless refugees to trafficking. Additionally, blockchain by its very nature is a borderless technology, so access to identification documents could take place anywhere in the world should they be stored on the blockchain and an internet connection is available.^{7,8}

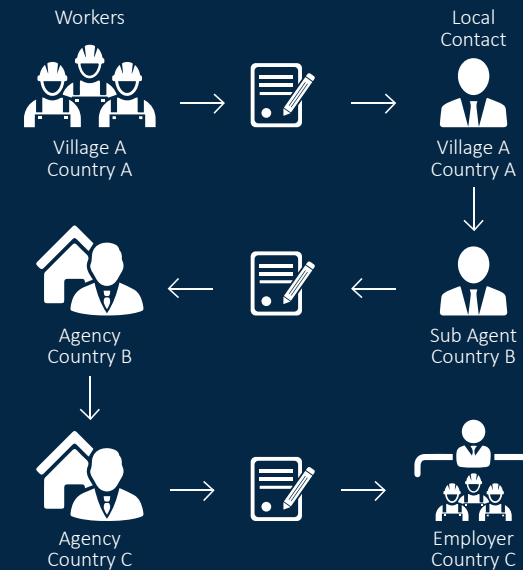
Use Case 2: Employment Contracts

By storing an employment contract on the blockchain, the contract itself becomes immutable, and any subsequent changes made to the contract are recorded. A permanent record of employment contracts undertaken allows for greater legal accountability should workers be subsequently charged illegal fees or be underpaid for the work undertaken, offering significantly higher security for employees than a traditional paper contract.⁹ These contracts can also be valuable for companies that use subcontractors to source their labour, as they may not have a direct line of sight over their subcontractors' hiring policies which can lead to indirect involvement in illicit forced labour practices. In requiring subcontractors to store their employees' legal documentation on a mutually accessible blockchain, they can take comfort in the contracts being offered to subcontracted employees.¹⁰

Use Case 3: Payments

Blockchain technology has the potential to help the 'unbanked' and 'underbanked' – those individuals who for varying reasons are unable to obtain traditional bank accounts.¹¹ These individuals are vulnerable, economically disadvantaged and often reliant on others which leaves them open to exploitation. A rise of fintech companies specifically catering, for example, towards those without the relevant identity documentation, has seen many underbanked individuals able to build an online identity and therefore gain access to credit.¹² In addition, by making payments to employees on the blockchain, companies are able to provide an immutable record of their payment practices which may be viewed throughout their supply chain for the sake of transparency.

CONTRACT IN REGULAR LABOUR MARKET



BLOCKCHAIN CONTRACT STAGE



Limitations

In order to encode information onto a blockchain, whether it be employment contracts or identification documentation, resources are required to collect the data, and the relevant expertise is required to process the data onto the blockchain. This requires time and money, which can be challenging in developing nations, and may hinder the uptake of blockchain technology. Additionally, many initiatives require wider cooperation in order to be successful. For example, storing identification documentation on the blockchain requires the cooperation of governments to recognise this form of documentation as legitimate, otherwise the purpose of the identification blockchain is redundant.

Investigation: Following The Coins

Cryptocurrencies, to varying extents, offer anonymity to their owner as they are able to hide their true identities behind the strings of numbers and letters that make up their wallet addresses. Initially, this anonymity caused alarm amongst law enforcement, as illicit websites such as the infamous Silk Road allowed criminals to trade anything, including guns, drugs, and child pornography, in exchange for cryptocurrencies sent from seemingly anonymous sources. However, in the case of Bitcoin, all transactions are stored on the publicly distributed blockchain ledger meaning that anyone can view any transaction and see where every Bitcoin has come from, although these addresses could be an alphanumeric string rather than an identifiable name. The eventual prosecution of Silk Road founder Ross Ulbricht came after a long investigation into millions of Bitcoin transactions, and the eventual discovery of his IP address from a connection to a post in a forum, which led law enforcement to him.¹³

Similar investigations take place into the use of Bitcoin to pay for services such as advertising victims of trafficking on prostitution websites, designed to hide the identity of the seller.

Likewise, those purchasing such services are able to make payments without such transactions showing on their bank account statements. However, increasingly sophisticated machine learning and AI technology is allowing law enforcement to track payments linked with illicit ads to particular Bitcoin wallets, allowing them to identify nexuses and connect the transactions with information such as phone numbers and addresses. Additionally, where these individuals use crypto-exchanges for obtaining their cryptocurrencies, it is possible for law enforcement to subpoena their details from these exchanges.

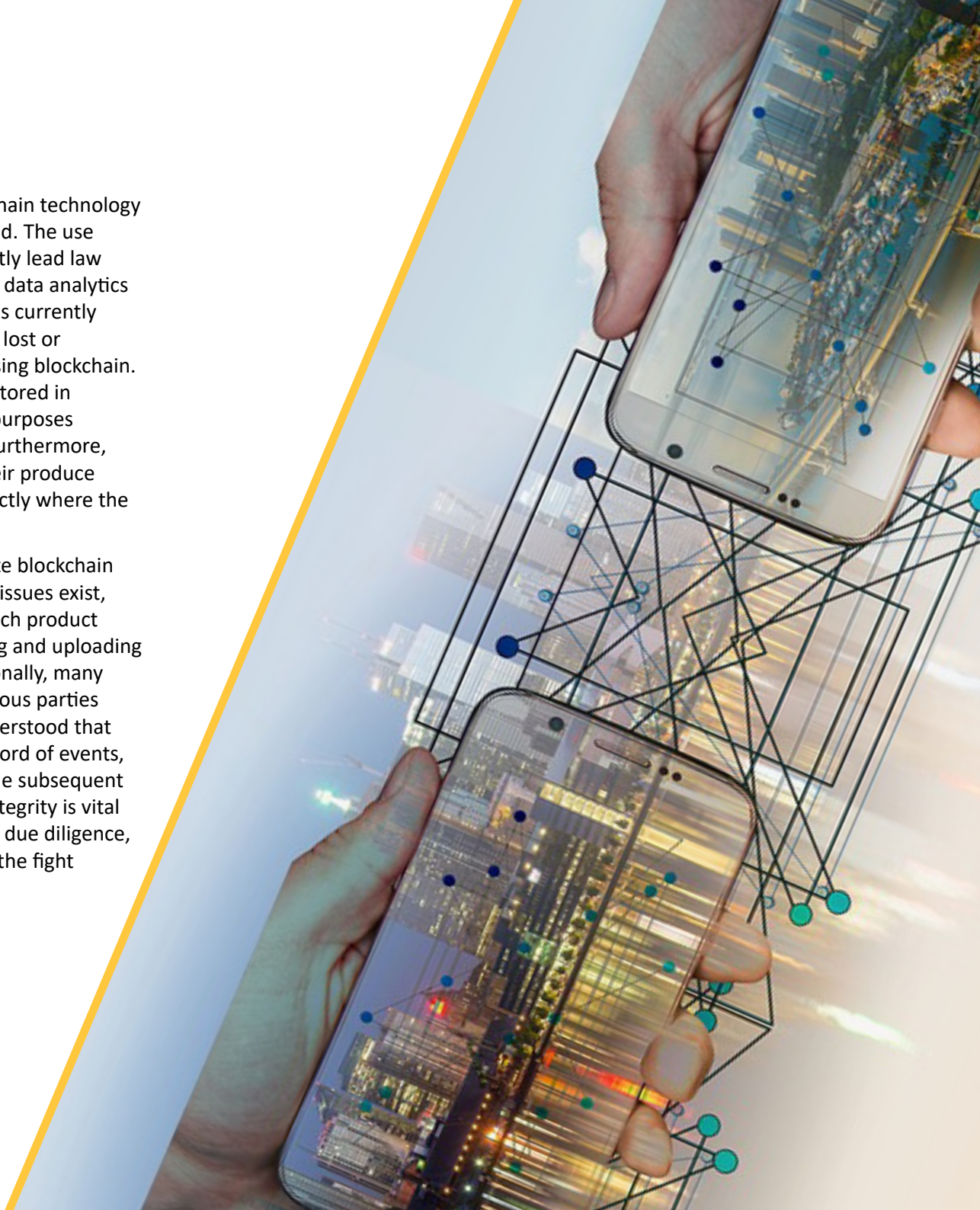
Limitations

The process of tracking cryptocurrencies is incredibly time consuming, and the anonymity afforded to owners makes it a difficult task requiring dedicated specialists and technology. While there has been some success in tracking criminal activities through cryptocurrency use, the increased scrutiny of Bitcoin in relation to illicit activities has led to a rise in more secretive cryptocurrencies, known as privacy coins, such as Monero which has been designed to obfuscate entirely the source and destination of any transaction. These pose further threats to the fight against trafficking, and it is important for companies and governments to be aware of the dangers that these currencies pose and legislate accordingly.

Conclusions

Overall, there are a number of practical applications of blockchain technology in combatting modern slavery that are currently being explored. The use of cryptocurrencies to purchase illicit services may inadvertently lead law enforcement to perpetrators with the further development of data analytics and smart tracking technology. Additionally, information that is currently usually held in paper form, and therefore susceptible to being lost or confiscated, can be stored on a virtual immutable ledger by using blockchain. For example, identity documents and employment contracts stored in a format that cannot be changed or accessed for illegitimate purposes provide greater security to those vulnerable to exploitation. Furthermore, the blockchain may be used by companies looking to track their produce throughout the supply chain, allowing the end user to see exactly where the product was sourced and the journey that it has made.

As with any nascent technology, it is important not to overstate blockchain as a miracle cure for the problem of modern slavery. Practical issues exist, such as concerns over maintaining a unique physical tag on each product throughout the supply chain, or the costs involved in collecting and uploading vast amounts of information for identification records. Additionally, many blockchain initiatives would require the cooperation of numerous parties in order to achieve meaningful success. Finally, it must be understood that while blockchain is a useful tool for creating an immutable record of events, if the data input at the source is fundamentally flawed then the subsequent blocks will be built using this flawed data, so the initial data integrity is vital to the success of any blockchain. Overall, coupled with proper due diligence, blockchain technology has considerable potential to enhance the fight against modern slavery.



An Overview of the Mekong Club

The vision of the Mekong Club is to harness the power of the private sector to change business practices in a way that will significantly reduce modern slavery. We aim to act as a catalyst for this change – engaging, inspiring and supporting the private sector to take the lead in the fight against this crime.

We have two major objectives:

- To increase understanding and awareness of modern slavery throughout the international business community.
- To identify practical ways to address modern slavery.

To meet these objectives, we use four strategic pillars:

1. **Mekong Club Association:** The Mekong Club uses an association model to bring together four industry-specific working groups that meet on a quarterly basis: Banking and Finance; Footwear and Apparel; Hospitality; and Retail. This model encourages like-minded companies to share their experiences and work together in a safe environment. Participating members review available information, identify industry priorities, and provide suggestions on what can be done to add practical value to the response.
2. **Development of Tools:** Between working group meetings, the Mekong Club takes the recommendations made by its members and operationalises them with the help of technical advisors/experts in the field (toolkits, training programs, data updates, etc.). Once developed and tested, these tools are used by members to improve their response to modern slavery. The materials are also made available to our industry partners, thus increasing their reach and usefulness.
3. **Awareness Raising and Advocacy:** Awareness raising and advocacy have always been an important core component of the Mekong Club's strategy. The objectives of these efforts are to create a general understanding of the issue; to help companies understand the potential vulnerability to their business; to desensitize the private sector; and to encourage them to join the overall fight.
4. **Leadership:** Using ambassadors from the business world, the Mekong Club aims to increase the influence of the private sector in stepping up and taking a leadership role in the fight against modern slavery. These individuals, who are leaders in their respective fields, are made available to mentor individual companies. They aim to identify gaps in knowledge and actions related to modern slavery, offer useful recommendations and then encourage private sector partners to take a more active role.

Sources

1. [Mougayar \(2016\), Explaining the Blockchain via a Google Docs Analogy](#)
2. [Deloitte \(2018\), Using blockchain to drive supply chain transparency](#)
3. [Everledger](#)
4. [WWF \(2014\), "From bait to plate"](#)
5. [Nation \(2018\), "WWF Blockchain to track sustainable tuna from bait to plate"](#)
6. [Bloomberg \(2017\), 'Eight Reasons To Be Skeptical About Blockchain', Forbes Magazine](#)
7. [Mainelli \(2017\), 'Blockchain will help us prove our identities in a digital world', Harvard Business Review](#)
8. [WWF \(2014\), "From bait to plate"](#)
9. [Bacci \(2017\), 'Moldova eyes blockchain to end child trafficking', Thomson Reuters](#)
10. [Pinna & Ibba \(2017\), 'A blockchain based decentralised system for proper handling of temporary employment contracts](#)
11. [Brown & Smit \(2017\), 'Will blockchain disrupt the HR technology landscape?](#)
12. [AccessWire \(2018\), 'Uulala the blockchain startup empowers Latinos with financial inclusion to connect the cash consumer to the formal economy](#)
13. [Hietner \(2018\), 'How blockchain could benefit the underbanked](#)
14. [BBC News \(2015\), 'Silk Road drug website founder Ross Ulbricht jailed'](#)



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