**IT Technologies - Blockchain and Cryptocurrencies**

***What does it do?***

Blockchain technologies are a unique way of acquiring, storing and sharing information via a Ledger on a public or private network where all users have access to verify and view data using encryption. The concept begun in 1991 but was popularised in 2008 by an entity by the name of Satoshi Nakamoto, who released a white paper concept using Blockchain technologies for currency, starting Cryptocurrency, specifically, Bitcoin.

Records of a transaction are recorded as Blocks of data that can show information of who, what where or why of any asset or product you are wanting to track. As a Block can only hold a limited amount of data, new Blocks are created to create a chain. The Block is then assigned a unique set of numbers and letters, which can be up to 64 digits long called a cryptographic hash. This hash code is what organises the information to be added to the ledger in Blocks, linking the Block with the previous Block and joining a new Block to the chain. These transactions once created, cannot be reversed because they are linked to the Blocks before them in a chronological order. This information sits on a distributed database that is visible to all users and no single user has control over the information, however, every user can verify records of any transaction. The concept of peer to peer transparency and the irreversible chain is what makes Blockchain technology a secure way of storing transactions in an anonymous way. Cryptocurrency was borne of the idea that you could use Blockchain to store and transmit digital payment systems that don’t rely on banks to verify them, instead being verified by the peers in the user network.

There are currently over 18,000 cryptocurrencies with Bitcoin remaining the most popular, and the majority of the currencies being dormant. Bitcoin has remained the popular choice due to it being the original cryptocurrency to be launched and its wide acceptance on trading sites and digital wallets. Bitcoin’s price history remained largely unchanged from its launch in 2009 where it remained a digital payment of choice for anonymous users of the dark web platform Silk Road. The closure of Silk Road was the end of bitcoin’s beginning. It was perhaps the moment it became clear that removing financial institutions from money would not necessarily mean a more trustworthy environment, and it also didn’t guarantee protection from the state. Ethereum was the beginning of another big shift in the community: the change in focus from bitcoin per se to blockchain as a technology. Using the blockchain, Ethereum lets users write applications and make money from their work. The best-known application is the “smart contract.” (Though this technology bills itself as a way of replacing lawyers, it is incredibly difficult to get lawyers out of anything once they’ve dug in. Just saying!) Here’s a very reductive way of establishing a smart contract: let’s say you and I have agreed that if I write you a history of bitcoin, you’ll send me $10 on my birthday this year. We can do that via a legally enforceable contract, which involves lawyers, notaries, and so on — or we can do it via Ethereum. In the latter case, you put $10 worth of smart coins in escrow, and when the terms of the contract are met, those coins are released to me. If I don’t meet the terms of our agreement, the coins are released back to you.

Automating trust in Blockchain is emerging as the next step to legitimise the process. To automate trust, Essential Eight technologies — especially blockchain, IoT and AI — can work together to ensure the authenticity of data, verify identities and enable secure multiparty transactions. Converged technologies can provide ways to automate trust in physical, digital and human assets. In a typical example, IoT sensors can track a pallet of food from the time it leaves the farm to when it gets to the warehouse and then to the retail store, verifying the entire supply chain. This authenticates where a specific shipment is along the route, as well as the condition of the food during each leg of the journey: Is the shipping container becoming too hot, too cold or too humid? This information is recorded in a secure, immutable blockchain. Together, IoT and blockchain can create an immutable supply chain, ensuring that buyers are getting an authentic product that has not been damaged or switched along the way. These technologies can also verify whether a product that contains hazardous materials has been disposed of correctly and safely. Trust is at the heart of all business and personal relationships. If employees, customers, investors, and communities can’t trust the safety, security and privacy of data, systems and processes, your business will suffer. Without trust and transparency, you also could be subject to regulatory and legal actions.

***What is the likely Impact?***

China has banned cryptocurrency trading multiple times. An outright ban on crypto mining last year was a massive loss to the industry, as most crypto mining happened in China. Mining involves running software on computer servers to solve cryptographic algorithms. This process validates transactions and maintains a shared record of transactions across the blockchain network. People who participate, the “miners” are automatically rewarded in cryptocurrency. Mining is an international industry, and large capital outlay goes towards the land, power and infrastructure needed to set up mining warehouses. In September 2021, when China banned all cryptocurrency-related activity, it reshaped an industry for which it had provided a haven. Miners scrambled into crypto-friendly Kazakhstan, propelling the country into world’s second-biggest Bitcoin production base, by one estimate. Trapped in lockdown, Shanghai residents turn to WeChat groups for food

But six months later, the industry is already being pushed out. Facing civil unrest and blackouts on the electricity grid, the government has throttled the power supply of the miners it once welcomed. As it buckles under infighting and government pressure, Kazakhstan’s significant mining base is preparing to move on, industry players and experts say. Smaller players can either flee somewhere like Russia — a risky jurisdiction, whose hostile politics would imply another temporary home — or, for bigger outfits, swallow higher costs to join the swelling ranks in the U.S., where the mining industry is clearly beginning to concentrate.

***How will this affect you?***

While I personally have not invested in Cryptocurrency, the majority of my family live overseas in El Salvador who I personally support financially by way of money transfers from established agencies such as Western Union. El Salvador is an emerging country, having been through 21 years of civil war and only recently electing an independent government who is trying to bring the country in line with the first world by creating a Crypto friendly environment. In September of 2021, Bitcoin was made legal tender in El Salvador as all citizens with the government issuing a digital “Chivo Wallet” containing $30 for all citizens signing up to the scheme. From its inception, people were logging on only to notice their identities had been stolen, along with their promised sign up bonus. The majority of citizens lost faith once they realised their internet connections were too weak to support the internet infrastructure to make fast transactions needed to make the scheme viable. When I first heard about this rollout, I was happy to speak to my relatives about it and the possible make the change from our current money transfer arrangement to an instant exchange with no fees, but quickly found the process stressful when my relatives could not find an ATM to withdraw the funds. By the time they had found someone who would trade with Bitcoin, their value had dropped considerably from the time it was sent. Whilst in theory the idea of circumventing traditional banking practices in emerging economies sounds like utopia, the reality is the crypto economy is too mercurial and leave the people it intends to help, in an even more vulnerable position by people who don’t even live in their economy.