Case Study: To Study Blockchain Technology, its Needs and Application in various Domains.

What is Blockchain Technology?

Blockchain is a system of recording information in a way that makes it difficult or impossible to change, hack, or cheat the system. A blockchain is essentially a digital ledger of transactions that is duplicated and distributed across the entire network of computer systems on the blockchain.

Need of Blockchain Technology Because of Following Reason:

- **You get a history of activity, not just a snapshot in time.** When you look at a regular database, you're getting a snapshot of data that's up to date in that moment in time. Blockchains do this too, but they also maintain a record of all the information that existed before. It's a database with history, if you like.

- **There's no one, central point of attack.** The fact that blockchain is a decentralized way of storing and accessing data makes the whole system incredibly secure – because, unlike a centralized database, there's no one single point of entry for hackers. This makes it particularly useful for recording transactions in a secure manner.

- **And no centralized control.** Because the system of record is decentralized and replicated in its entirety in multiple places, there's no need for a central administrator and all the costs and infrastructure that comes with it.

Applications of Blockchain:

1. Payment processing and money transfers

Arguably the most logical use for blockchain is as a means to expedite the transfer of funds from one party to another. As noted, with banks removed from the equation, and validation of transactions ongoing 24 hours a day, seven days a week, most transactions processed over a blockchain can be settled within a matter of seconds.

2. Monitor supply chains

Blockchain also comes in particularly handy when it comes to monitoring supply chains. By removing paper-based trails, businesses should be able to pinpoint inefficiencies within their supply chains quickly, as well as locate items in real time. Further, blockchain would allow businesses, and possibly even consumers, to view how products performed from a quality-control perspective as they traveled from their place of origin to the retailer.

3. Retail loyalty rewards programs

Blockchain could further revolutionize the retail experience by becoming the go-to for loyalty rewards. By creating a token-based system that rewards consumers, and storing these tokens within a blockchain, it would incentivize consumers to return to a certain store or chain to do their shopping. It would also eliminate the fraud and waste commonly associated with paper- and card-based loyalty rewards programs.

4. Digital IDs

More than 1 billion people worldwide face identity challenges. **Microsoft** ([NASDAQ:MSFT](#)) is looking to change that. It's [creating digital IDs within its Authenticator app](#) -- currently used by millions of people -- which would give users a way to control their digital identities. This would allow folks in impoverished regions to get access to financial services, or start their own business, as an example. Of course, Microsoft's attempts to create a decentralized digital ID are still in the early stages.

5. Data sharing

Cryptocurrency IOTA launched a beta version of its Data Marketplace in November, demonstrating that blockchain could be used as a marketplace to [share or sell unused data](#). Since most enterprise data goes unused, blockchain could act as an intermediary to store and move this data to improve a host of industries. While still in its early stages, IOTA has more than 35 brand-name participants (with Microsoft being one) offering it feedback.

6. Copyright and royalty protection

In a world with growing internet access, copyright and ownership laws on music and other content has grown hazy. With blockchain, those copyright laws would be beefed up considerably for digital content downloads, ensuring the artist or creator of the content being purchased gets their fair share. The blockchain would also provide real-time and transparent royalty distribution data to musicians and content creators.

7. Digital voting

Worried about voter fraud? Well, worry no more with blockchain technology. Blockchain offers the ability to vote digitally, but it's transparent enough that any regulators would be able to see if something were changed on the network. It combines the ease of digital voting with the immutability (i.e., unchanging nature) of blockchain to make your vote truly count.

8. Real estate, land, and auto title transfers

One of the primary goals of blockchain is to take paper out of the equation, since paper trails are often a source of confusion. If you're buying or selling land, a house, or a car, you'll need to transfer or receive a title. Instead of handling this on paper, blockchain can store titles on its network, allowing for a transparent view of this transfer, as well as presenting a crystal-clear picture of legal ownership.

9. Food safety

Yet another intriguing use for blockchain could be in tracing food from its origin to your plate. Since blockchain data is immutable, you'd be able to trace the transport of food products from their origin to the supermarket. What's more, should there be a food-borne illness, blockchain would allow the source of the contaminant to be found considerably quicker than it can be now.

10. Immutable data backup

Blockchain might also be the perfect way to back up data. Even though cloud storage systems are designed to be a go-to source for data safekeeping, they're not immune to hackers, or even infrastructure problems. Using blockchain as a backup source for cloud data centers -- or for any data, as **Boeing** is considering with GPS receivers on its planes -- could resolve this concern.