Abstract— Blockchain is a data management technology and redesigned transactions designed primarily for Bitcoin cryptocurrency. Blockchain technology has been growing since the idea was introduced in 2008. The reason for the interest in Blockchain is its key features that provide security, anonymity and integrity to information other than any third-party transaction management organization, and therefore create exciting research environments, especially in view of technical challenges and limitations. In this study, we conduct systematic mapping research with the aim of gathering all relevant research into Blockchain technology. Our goal is to understand current research topics, challenges and future indicators in terms of Blockchain technology from a technological point of view. We have published 41 basic papers in scientific archives. The results show that focusing on more than 80% of the paperwork in the Bitcoin system and less than 20% deals with others. Blockchain applications including e.g. smart contracts and licenses. Most of the research focuses on uncovering and improving Blockchain limitations from privacy and security perceptions, but many of the proposed solutions do not have a concrete test of their effectiveness. Many other challenges related to Blockchain expansion including throughput and latency have been left unread.

Index Terms - Decentralized finance, scalability, blockchain
Ethereum, cryptocurrency, Bitcoin, Decentralized Applications.

Introduction
Blockchain, mostly known as the technology running the Bitcoin cryptocurrency, is a public ledger system maintaining the integrity of transaction data. Blockchain technology was first used when the Bitcoin cryptocurrency was introduced. To this day, Bitcoin is still the most commonly used application using Blockchain technology. Bitcoin is a decentralized digital currency payment system that consists of a public transaction ledger called Blockchain. The essential feature of Bitcoin is the maintainability of the value of the currency without any organization or governmental administration in control. The number of transfers and users in the Bitcoin network is constantly increasing. In addition, the conversions with traditional currencies, e.g. KRW, EUR and USD, occur constantly in currency exchange markets. Bitcoin has therefore gained the attention of various communities and is currently the most successful digital currency using Blockchain technology.

I. MATRICES OF COMPARISON
Decentralized finance is revolutionizing finance sector but it is at the same time grappling with a lot of issues, mainly because of limited throughput of the underlying platform, Ethereum, as innovative as Ethereum is it still suffers from slow speed and there are a lot of users in Ethereum.

1. Latency: To create sufficient security for a Bitcoin transaction block, it takes currently roughly 10 minutes to complete one transaction. To achieve efficiency in security, more time has to be spent on a block, because it has to outweigh the cost of double spending attacks. Double-spending is the result of successful spending of money more than once. Bitcoin protects against double spending by verifying each transaction added to the block chain, to ensure that the inputs for the transaction have not been spent previously. This makes latency a big issue in Blockchain currently. Making a block and confirming the transaction should happen in seconds, while maintaining security. To complete a transaction e.g. in VISA takes only a few seconds, which is a huge advantage compared to Blockchain.

2. Size and bandwidth: At the moment, the size of a Blockchain in the Bitcoin network is over 50,000MB (February 2016). When the throughput increases to the levels of VISA, Blockchain could grow 214PB in each year. The Bitcoin community assumes that the size of one block is 1MB, and a block is created every ten minutes. Therefore, there is a limitation in the number of transactions that can be handled (on average 500 transactions in one block). If the Blockchain needs to control more transactions, the size and bandwidth issues have to be solved.

Different types of blockchain technology
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3. Security: The current Blockchain has a possibility of a 51% attack. In a 51% attack a single entity would have full control of the majority of the network’s mining hash-rate and would be able to manipulate Blockchain. To overcome this issue, more research on security is necessary.

4. Wasted resources: Mining Bitcoin wastes huge amounts of energy ($15 million/day). The waste in Bitcoin is caused by the Proof-of-Work effort. There are some alternatives in industry fields, such as proof-of-stake. With Proof-of-Work, the probability of mining a block depends on the work done by the miner. However, in Proof-of-Stake, the resource that is compared is the amount of Bitcoin a miner holds. For example, someone holding 1% of the Bitcoin can mine 1% of the “Proof-of-Stake blocks”. The issue with wasted resources needs to be solved to have more efficient mining in Blockchain.

II. COMPARISONS

A. Throughput

1. The Bitcoin network executes 7 transactions per second, but it is on the slower side of the blockchain network. The required block confirmation takes around 60 minutes.
2. Ethereum network executes 15 transactions per second, and the required block confirmations take around 5 minutes.
3. Litecoin network executes 56 transactions per second, and the required block confirmations take around 30 minutes.
4. Bitcoin cash network executes 61 transactions per second and the required block confirmations take around 60 minutes.
5. Ripple network executes 1,500 transactions per second and the required block confirmations take around 4 seconds.
6. Stellar (Ripple fork) executes 1,000 transactions per second and the required block confirmations take around 2 seconds.

B. Support for smart contracts

A smart contract is a self-executing contract with the terms of the agreement between buyer and seller being directly written into lines of code. The code and the agreements contained therein exist across a distributed, decentralized blockchain network.

Hyperledger Fabric: Hyperledger is an open-source, global collaboration that is hosted by The Linux Foundation. Using this, one can create and develop enterprise-grade, distributed ledger frameworks to support business transactions. It was launched in 2016 with a technical and organizational governance structure and comprises 30 founding corporate members. It makes use of a modular approach to build blockchains, and this helps companies develop what works best for them. It has attracted big companies such as J.P. Morgan, IBM, Intel, and Samsung. More than software.

a. NEM: It refers to a peer-to-peer cryptocurrency and blockchain platform that was launched on 31 March 2015. It has now become the first choice of many developers as it is written using java, which is one of the widely used programming languages in the world. It is easily accessible, and it is not mandatory for developers to learn a platform-specific programming language like Solidity. As per experts, the recently launched Catapult or Mijin v.2 update by NEM renders it as the safest smart contract platform across the globe. It is highly scalable. While Ethereum can process 15 transactions per second, NEM manages to process a 100. These features make NEM the best choice for developers.

b. Waves: Waves is an open-source platform launched in June 2016, which mainly focuses on dealing with existing obstacles that come to the way of mainstream blockchain implementation, particularly speed and scalability. In the waves ecosystem, smart contracts enable changing the default behaviour of accounts and assets. It is not considered a separate entity, it cannot be called, and it cannot call another smart contract. It is considered an ideal platform for smart contracts and Initial Coin Offerings (ICO). Waves blockchain has also created its own identity for making token operations possible.

Many prominent blockchains like bitcoin and litecoin do not support smart contracts at all.

C. Decentralization

A blockchain can be trusted only when it is decentralized enough. Many consider Bitcoin as the leading blockchain in terms of decentralization, though a few might argue against this. It employs a proof-of-work (PoW) consensus mechanism, which, unlike other mechanisms, is energy-intensive and requires specialized equipment to participate. This makes it incredibly expensive and nearly impossible to take over now that the network has grown so much over the last decade.

Ethereum is the largest network in terms of developer activity and is also the second-largest blockchain, with some purporting it to be even more decentralized than Bitcoin since it is now in transition to proof-of-stake (PoS) with its ultimate upgrade, Ethereum 2.0.

Unlike Bitcoin and Ethereum, Maker DAO brings another dimension to decentralization: community governance. In March 2020, the Maker Foundation boosted its governance by releasing the protocol's control to those holding the platform’s native currency, MKR. These governors (AKA token holders) are responsible for the decision-making of the platform. Consequently, this ensured that the DeFi network maintained a $1 peg to the DAI stablecoin.

III. CONCLUSION AND FUTURE WORKS

In this paper, we have proposed Blockchain truly has the potential to become the next big thing in the technology space and when it matures, much like what the internet did in the 1990s, it can disrupt several industries at scale. As
we have seen, firms across several industries have already started adopting and piloting a few internal services on Blockchain. So, how fast the technology gains mass adoption is now a function of how rapidly innovative applications can be built on top of Blockchain. Crypto currencies such as Bitcoin, on the other hand, although popular, may take some time to be adopted as a primary medium of exchange, replacing fiat.

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