

TOWARDS A BLOCKCHAIN-BASED SHARING ECONOMY

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WHAT IS THE SHARING ECONOMY?

Although there is no single definition, the term 'Sharing Economy' has now become commonplace and indicates an economic model where everyone can offer goods or services in exchange for money. There are four fundamental elements that define a sharing economy: the presence of a **platform**; **people** (Community); **convenience** and **technology** (algorithms). The sharing economy's model is therefore based, not on a top-down provision of services but on **a level playing field of sharing goods and services**. Thanks to this new opportunity, professionals, consumers and ordinary citizens can provide skills, goods and knowledge in exchange for cash payments. As was often emphasised, this new consumer model is opening up new ways for economic growth and development.

The goal is to promote more socially aware forms of consumption based on **reuse** instead of on **purchasing** and on **access to resources** rather than **ownership**. In doing so, new lifestyles have promoted the **saving** and **redistribution** of money, nurturing **socialisation** and **environmental protection**.

In our times, the need for a more careful and responsible use of resources is becoming increasingly a priority: according to a **2004 report from the UN**¹, by about 2050 **two-thirds** of the world's population will be urbanised and, at the same time, our planet will see an increase of approximately **2.5 billion** people. For this reason, every possibility to reduce our environmental footprint and promote more sustainable forms of consumption become precious. In this scenario, the sharing economy emerges as a valid alternative.

¹ <http://www.un.org/en/development/desa/news/population/world-urbanization-prospects-2014.html>

PROBLEMS WITH THE CURRENT SHARING ECONOMY'S MODEL

Despite their huge success and the wide range of companies such as Uber, Lyft, Airbnb, Ola etc., their platforms have been the focus of criticism and have been accused of betraying their initial pioneering spirit, i.e. **sharing**. For many, the very idea of sharing has vanished for profit-making notions, creating an oligarchy of monopolies that have total control over the **rules** and **functionality** of platforms, as well as on **transactions** and users' **sensitive data**.

USERS AND VALUE: THE FUNDAMENTAL BRICKS OF THE SHARING ECONOMY

These companies might differ from each other in the services they offer, but they all share a common denominator: an increase in distribution (and turnover) is coupled to the **contributions from individual users**, that **generate value** within the network and, in turn, increase the value of the companies themselves.

This property is known as a **network effect**, whereby the value of a product or service rises as its use increases. In the case of Uber, the more drivers that register with the platform, the more the service becomes attractive to potential passengers and, vice versa, the more the number of passengers increases, the more drivers will be incentivised to join. It is clear how **prosumers** and **consumers** are the beating heart of these economies.

However, the main problem with these models is that the value generated from users is not equally distributed among every participant in the network; indeed, a large part of the profits is intercepted by the large intermediaries as a "tax" for the services provided on their platforms.

As **Don Tapscott** pointed out:

A lot of writers talk about Uber and Airbnb and TaskRabbit and Lyft and so on as part of the sharing economy. This is a very powerful idea, that peers can be created and share the wealth. These companies are not really sharing. In fact, they're successful precisely because they do not share. They aggregate services together, and they sell them²

FEES AND PERSONAL DATA

What these new business models are criticised for is that a true sharing economy should strive to be without intermediaries and it should facilitate free exchanges between users who provide and buy services. On the contrary, these companies tend to remain profit-driven centralised institutions: every transaction that takes place between a consumer and a supplier, is channelled through a software and **proprietary infrastructure**, which takes a significant percentage of the fees for each transaction performed within the network (Uber, for example, claims 25% on each trip)

In fact, the main source of income for the giants of the sharing economy is the **fees** that each user pays to enjoy the services offered on the platform itself. Furthermore, these companies have access to a considerable amount of **data** about their users, which may be used in the future for commercial use. It is estimated that these companies' future revenues (mainly deriving from user fees) will double over the next four years, reaching \$40.2 billion³

CENTRALISATION AND INTERMEDIARIES

Currently, most of the sharing economy's companies are characterised by **centralised platforms** that play two key roles within the ecosystem.

Firstly, they allow you **to put providers and consumers in communication**, balancing supply and demand accordingly; for example, a person looking for a holiday accommodation must be able to find a host who is willing to rent an apartment in the locality and during the period they wish to stay. Secondly, they deal with the **governance and security** of the network, to ensure a usable and secure service for its users.

Resorting to centralised intermediaries represents a significant gain in terms of efficiency. However, the downside is given by the presence of monopolies that have a large control over the entire network, from the number of fees to service policies, up to the personal data of users. Furthermore, the centralised nature of these platforms makes them vulnerable to **cyber attacks** or at risk of **single point of failures**. The recent news of a cyberattack on Uber's databases generated a loss of \$57 million in data⁴, clearly highlights the risk of a **centralisation of sensitive data**.

³ <https://www.juniperresearch.com/press/press-releases/sharing-economy-revenues-to-double-by-2022>

⁴ <https://www.theguardian.com/technology/2017/nov/21/uber-data-hack-cyber-attack>

BLOCKCHAIN: TOWARDS A 2.0 SHARING ECONOMY

People widely believe that blockchain has the potential to improve or even completely revolutionise the way current companies operate in the sharing economy market. Specifically, we want to replace the **top-down** hierarchical model with a **bottom-up community approach**, where people can organise themselves to coordinate common activities and interact directly with each other without assistance from a third party.

This will pave the way for a **2.0 sharing economy**, a new economic model characterised by the **absence of intermediaries, zero fees** and **direct trades**, in a secure, decentralised and completely transparent environment. To achieve this, you can use **Blockchain** in its various incarnations, such as **Ethereum, Eos** or **Neo**, to implement **Smart Contracts** and creating decentralised applications (**dApps**) that exploit existing web-based technologies in combination with that of the blockchain.

In fact, with a blockchain solution, software applications no longer have to be deployed on a centralised server but can be performed directly on a peer-to-peer network that is not controlled by any central authority. On the contrary, each user will become a sort of intermediary, contributing to the creation of a **shared and trustless infrastructure**.

Although it has just begun its ascent, it is already possible to observe the potential benefits that such a solution can offer to this sector of the economy:

GREATER TRANSPARENCY WITHOUT THIRD PARTY INTERVENTION

Throughout history, people have sought trusted third parties as custodians, paid service providers or risk pools, in other words, like **guarantors**. The need to use these intermediaries lies in the basic functions that these entities guarantee and which can be summarised as follows:

- **Validation:** identify and guarantee the existence of someone or something within the system
- **Verification of transactions:** verify the correctness of transactions within the network, for example preventing someone spending money that they do not possess (the so-called problem of **double spending**)
- **Registration:** keep a transaction log (database)

Now, for the first time, blockchain technology allows direct transactions from person-to-person, without resorting to a **central authority** who plays the role of guarantor, whilst still guaranteeing high levels of security.

Basically, blockchain is a different means of recording a set of information: instead of storing them in a single place (such as on the huge databases of Uber, Lyft or Airbnb), blockchain allows the creation of multiple copies of this information that are **distributed through** all network nodes. Anyone with an internet connection can download the entire blockchain registry at any time and have a perfect record of who owns what.

Furthermore, decentralised applications (**dApps**) can use **smart contract** to eliminate dependency on **third-party processors** for the verification of operations and the payment of the fee. For example, in one blockchain-based sharing economy, hosts would be able to directly notify all network participants that a given asset or service is available. The smart contracts will then ensure that there are sufficient funds in the consumer's wallet and, after checking the execution of the parameters defined in the contract, transfer the funds to the host's wallet.

PROFIT REDISTRIBUTION AND GOVERNANCE

One of the key challenges for the creation of a new sharing economy, concerns a fair and equitable **redistribution** of the value generated within the ecosystem by the users themselves. Large intermediaries such as Uber and Airbnb syphon off a lot of the value created without redistributing it, and also have the power to arbitrarily modify the way in which the system works. An example comes from **Uber**: when the American company decided to lower their drivers' compensation, these were forced to accept new policies in order to continue working⁵. Likewise, Airbnb hosts would be forced to do the same if the platform decided, for example, to increase commissions.

On the contrary, a blockchain solution would allow a **peer-to-peer exchange** with the consequent elimination of third parties; in this way, a direct transfer of value is facilitated, **safe** and **decentralised**. The profits generated can be shared fairly and directly among all members of the network: Blockchain can track how much each member has participated in the platform and generate compensation in proportion to their contribution.

⁵ <http://fortune.com/2017/05/20/uber-new-pricing-angry-drivers/>

TRUST ENHANCEMENT

A fundamental prerequisite for creating interactions and relationships in a peer-to-peer context is **mutual trust**: accepting putting yourself in the hands of users who are often complete strangers, requires a considerable amount of trust, both in the users and in the platform. To understand how important this is, let's try to imagine a world where Amazon had not implemented the **ranking systems** for its products or Airbnb had not enabled **reviews** for guests and hosts: most likely, these companies would not have attracted the same number of users and, consequently, would not have become what they are today.

Often, the price to pay for having a functioning trustworthy mechanism is **privacy**: most platforms require the user to provide "guarantees" for their use, such as **personal data**, **address**, a copy of their ID for **identity verification** purposes or even **credit card details**.

On the contrary, using Blockchain technology, it is possible to operate an entire system in environments of low, zero or even negative trust, through mechanisms of "**Zero-Knowledge**" that this technology allows you to implement. Thanks to this zero-knowledge proof, it is possible to ascertain the veracity of a statement without revealing other information, besides the fact that it is actually true. In this way, one can, for example, guarantee the **age** of a participant, their **reliability** or the presence of enough funds in their wallet for payments. Therefore, trust is no longer established by resorting to a third party that plays the role of guarantor, but by a clever code integrated with a mass consensus mechanism within a network.

As blockchain technology continues to gain mainstream **acceptance** and **adoption** (even if it still has to prove its **viability** in the future), we are given the opportunity to change the way in which trust and online relationships are built, ultimately rewriting how the sharing economy is structured.