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▶ Broadening the virtual world in vocational training. The potential of blockchain technology in skills certification

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Progress and changes usually begin with what is known as a "trigger". On 21st May 2021, the European Training Foundation took part in our cycle of videoconferences called "Vocational Training: a response to COVID-19".

The speaker, Xavier Matheu de Cortada, mentioned a wide array of experiences which, while having a common denominator with our region, show some particular features. One of them caught the attention of the audience: the use of blockchain in training-related topics.

I had already read some documents on the subject and had even discussed about this with some colleagues from Colombia, Chile, El Salvador, among others. In my opinion, the advancement of blockchain technologies can influence the way in which we work in vocational training. Subsequently, SENA's Director requested me to dive deeper into the subject and the product of such assignment is this note that I am presenting today, which barely pretends to be an introduction in the understanding of blockchain applications.

Blockchain technology, a term first coined in English, is an open source distributed database. Wikipedia defines it as a data structure in which the contained information is grouped in blocks where metadata intertwined with a block from a previous chain in a timeline can be added. Thanks to cryptographic techniques, the information contained in only one block can be denied or edited and this will modify all subsequent blocks.

This makes it extremely difficult to modify data once it has been stored online. Besides, each block resides in different nodes that are distributed throughout the world, which keep a complete copy of the chain. As there is no single information-centralising body, it is reckoned that information cannot be corrupted or altered.

In this way, public data bases that are shared and decentralized can be made up, and these cannot be subsequently altered. They work as a ledger where purchase and sale transactions, skills certifications, degrees, qualifications or any other kind of information and transactions are recorded[1].

The use of blockchain technology in the world of labour and vocational training is increasing. For instance, the World Bank has considered four global trends which have an influence on education: the use of neuroscience to understand students better and improve the learning design; MOOCs - massive open online courses - to achieve a higher access for students; the use of technologies, such as blockchain, to enable people to build up and document their skills, and multilingual learning which may expand the access to quality education[2].

Human resources management: blockchain as a transforming technology[3]

As mentioned in this article, in the human resources area "recruiters should start becoming familiar with how blockchain works, what its perceived benefits are, and who are the people best suited to help your company

1 Blockchain: como la tecnología puede mejorar el mercado laboral: https://blogs.iadb.org/trabajo/es/blockchain-como-la-tecnologia-puede-mejorar-el-mercado-laboral/
2 Patrinos, Harry. Live interview. ETF. 2020. https://www.facebook.com/watch/live/?v=563889920681980&ref=watch_permalink

explore where this budding technology might have a role."

There is a long list of enterprises interested in doing business through blockchain and its potential characteristics. They are: IBM, Oracle, JPMorgan Chase, Microsoft (LinkedIn's parent company), Amazon and American Express, to name just a few. It is now being used in industries ranging from shipping to healthcare, from farming and food safety to entertainment and gaming.

According to LinkedIn, blockchain is the most in-demand skill in the United States, the United Kingdom, France, Germany and Australia. Other tech skills, such as cloud computing, analytical reasoning, artificial intelligence, UX design, scientific computing, joined blockchain on the list of in-demand hard skills. As did a handful of other skills (affiliate marketing, sales, and video production) central to sales and marketing.

Identity, digital certifications and blockcerts

By using the blockchain technology, the MIT (Massachusetts Institute of Technology) Media Lab has developed "blockcerts", an in-production solution already being deployed by several countries to provide citizens with lifelong digital records that they own and can verify anywhere in the world for free.

For instance, the World Bank's Mission Billion Challenge promoted the use of blockchain in order to create digital identity documents in many low-income countries.

Some of the features of "blockcerts" include[4]:

- Give issuers and recipients lifelong ownership of their official records and data.

- Give issuers and recipients autonomy over how they use their own records and data and for free.

- Give relying third parties the ability to verify any record instantly and for free.

- The wallet or briefcase to store "blockcerts" is a mobile app used to receive and store them. It is completely private and managed by its owner. No one else has access to this wallet.

"Blockcerts" were launched in 2016 and are widely used for secure certification records, with multiple implementations on blockchains. The first examples of blockchain-based systems have already turned their prototypes into commercial products.

University certificate issuers of institutions, such as MIT, UT in Austin and the University of Nicosia, are considering the possibility of issuing digital diplomas to their students through this system. South Africa, Malta and Bahamas are among the countries that are evaluating these systems for identification and credential systems[5].

The potential of blockchain to link educational and vocational training institutions, their students with employers interested in their skills, is very broad. In South Africa, the University of Cape Town has started using a decentralised database which enables the contact between their students and the employers interested in their skills. Data are managed through blockchain which provides total security and control from stakeholders[6].

Among the new trends in digital credentials, open badges are also being mentioned. These are a system that is more inclusive and recognise academic achievements with the name of the person and the institution, issuance date, evaluated skills, etc.

In general, these are based on recognising skills and competencies acquired outside academic environments and they have the same challenges for distance assessment and the creation of a sustainable recognition system at a national, regional and global level.

In order to speed up and make its implementation viable, convenient instruments will have to be developed so that people can store and easily share their badges. Besides, training institutions should become aware of the benefits of transitioning their diplomas to open badges without affecting their quality or credibility.

Finally, we should wonder, is digital certification here to stay?

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3 The Most In-Demand Hard and Soft Skills of 2020. Bruce Anderson. LinkedIn. https://business.linkedin.com/talent-solutions/blog/trends-and-research/2020/most-in-demand-hard-and-soft-skills

4 Blockcerts: Recipient-Owned, Lifelong Digital Credentials. Natalie Smolenski. https://solve.mit.edu/challenges/id4d-mission-billion/solutions/5856

5 For more information, please see https://certificates.media.mit.edu/ or get in contact with the MIT Media Lab at certs@media.mit.edu

6 Detailed information can be found at https://registree.rocks/