

# The Knowledge Evaluation System in Function of Achieving Competences

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**Abstract** — In the paper, a proposal for a model for career monitoring through schooling and employment is presented. The system is presented and the application that enables the monitoring and development of human competences is developed.

**Keywords** — knowledge, evaluation, competences, blockchain technology, monitoring

## I. INTRODUCTION

All the listed information about the acquired education, skills and the improvement of competences that different people enter for one person should be available later so that other users could access them. Employers would benefit from being able to have credible information about potential candidates' competences, given the fact that the application of blockchain technology enables the indisputability of the existing data.

Some of the existing systems, such as LinkedIn [1], offer similar possibilities. This paper also contributes in that a blockchain-technology-based system is developed in order to ensure entered information credibility.

This knowledge evaluation system is in function of achieving competences.

The developed application will also be used as an evaluation means. The application will implement and prove the idea and show the efficiency of the proposed system. Blockchain technology application is essentially intended to provide us with undeniable data entered into a database.

In addition to the undeniability of information, it is also very important to consider the already existing educational system that on its part is already facing a problem of assessing students and teachers, because the same

assessment made in different educational institutions does not represent the same quality of knowledge.

## II. APPLICATION BASIC FUNCTIONALITIES OVERVIEW

The application whose use would enable monitoring and development of human competences, was created.

The application homepage is shown in Figure 1.



Fig 1. The application homepage

By registering him-/herself, the user obtains a unique GUID (Globally Unique Identifier).

The registered user has the opportunity to record his/her education, the success made on tests, the information about his/her employment through the application. The registered user's card contains the user's name and surname and GUID as the mandatory fields.

There is also information about:

- the schools he/she attended and the success achieved;
- the tests done in accredited institutions, the field in which they were done, and the success achieved on them;
- the courses he/she attended;
- his/her employment, stating the date of the engagement and a possible comment made by the employer.

The registered user has the opportunity to do a test in an accredited institution and to have the achieved test results automatically entered into his/her card.

In case the same test is repeated several times, all the results and number of such exams, the test date and the success achieved on it are stored in the card.

There is a list of courses, including the name of the lecturer and the educational institution. Lecturers and educational institutions have their own GUID.

For each lecturer, the following information should be defined:

- his/her name and surname and GUID;
- the institutions where he/she works or which he/she represents.

For each educational institution, the following information should be defined:

- the institution's name and GUID;
- the country (the country's name and GUID);
- the city (the city's name and GUID).

### III. CONCLUSION

The Blockchain has been widely adopted in many fields, e.g., finance, energy, and medical treatment, thanks to its excellence in decentralization, openness, autonomy, tamper-proofing, and anonymity [3].

Sometimes, the e-files of a student are missing or not backed up, and the file data are not shared timely between schools or between his/her school and employer. [2]

The proposed solution and the implemented application enable an authoritative evaluation of candidates, lecturers and educational institutions, which increases the accuracy of data about the acquired knowledge, the quality of lecturers, and the quality of educational institutions at the same time.

The data obtained based on the proposed solution and by applying blockchain technology are a credible and undeniable source of competences and offer great benefits to employers.

Information technologies enable decentralization, data changing prevention, digital signing, a public and independent check, and transparency/privacy control, by which different kinds of abuse are prevented, and the quick availability of content, cooperation and measuring the influence are enabled. [4]

The application of the blockchain technology to data decentralization and unchangeability, the application of cryptographic solutions aimed at defining and limiting data access control, i.e. data transparency and privacy, digital signing and digital certificates aiming to exclusively create accounts under the real identity and undeniability with the purpose of gaining an insight into the reputation of a participant in this system are possible. [5]

### REFERENCES

- [1] <https://www.linkedin.com/>
- [2] Y. Zheng, "Design of a Blockchain-Based e-Portfolio Evaluation System to Assess the Education and Teaching Process", *International Journal of Emerging Technologies in Learning (IJET)*, 2021, Vol. 16, no. 05, pp. 261 – 280
- [3] Koraneekij, P., Khlaisang, J. (2019). Students' Beliefs Regarding the Use of E-portfolio to Enhance Cognitive Skills in a Blended Learning Environment. *International Journal of Emerging Technologies in Learning (IJET)*, 14(2): 85-104
- [4] Q. Amer, K. Faten F., Blockchain Technology, Business Data Analytics, and Artificial Intelligence: Use in the Accounting Profession and Ideas for Inclusion into the Accounting Curriculum, *Journal of Emerging Technologies in Accounting*. 2020, Vol. 17 Issue 1, pp. 107-117
- [5] S. Pratima, J. Rajni, B. Malaya Dutta, R. Blockchain technology for cloud storage: a systematic literature review, *ACM Computing Surveys*. 2020, Vol. 53 Issue 4, pp. 89-32.