

AN ECOSYSTEM OF TRUST IN USING ARTIFICIAL INTELLIGENCE IN HIGHER EDUCATION

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Abstract - The paper examines the main trends and innovative practices in using artificial intelligence in educating students in higher schools, emphasizing the opportunities for building trust between their participants. The aim is to explore the main areas of impact and outline specific measures to create an ecosystem of trust in using AI by exploring the perceptions and assessments of different stakeholders. The report presents the results of a pilot study of perceptions of the role and degree of trust in AI by one of the key stakeholders – students. The research methodology includes normative and comparative legal analysis, in-depth interviews, and a questionnaire survey. As a result, recommendations are given to the international community, national legislation, and higher schools, outlining a legal and ethical framework for building trust and guaranteeing the rights of participants in the educational process.

Keywords - Artificial Intelligence, Digital Transformation, Ecosystem Of Trust, Higher Education

I. INTRODUCTION

Artificial Intelligence (AI) is entering people's lives, including in higher education. AI is perceived differently and leads to a transformation that affects all spheres of life - from the personal to the professional, also changing the norms of communication - social, legal, ethical, moral [1], [2]. The dynamics of this transformation is hardly subject to comprehensive legal regulation, but the protection of the public interest is necessary to ensure stability in relations.

The use of AI raises the problem of trust [2]. On the one hand, trust in the technologies, systems and solutions using AI, and on the other hand, trust between the traditional actors in educational, research and administrative activities in higher education institutions, respectively - building trust between the actors involved. Bulgarian higher education is in a period of change aimed both at adapting to modern public needs and at closer cooperation with business and its active involvement in the educational process at all its stages. As new technologies change economic and public priorities, business can act as a driver to increase human capital [3].

In the conditions of the COVID-19 pandemic and the subsequent economic and political instability [4], the question of trust in labor relations and in the education of students, who are also future participants in the labor market, is gaining more and more relevance and importance. In addition to compliance with laws, socially responsible employer and educational practices contribute to a stable ecosystem of trust [5]. They indicate the ethics of organizations, including universities, and the extent to which the diverse stakeholders in their activities can trust them. Furthermore, an ecosystem of trust is a suitable environment for incentivizing socially responsible behavior and imposing restrictions on the unethical use of AI-enabled technologies.

There is therefore a need to explore the perceptions and assessments of a wide range of interested parties on the most significant problems and effects on education sector caused by the entering of AI. The main ones are the members of the academic staff (Assistant Professors, Chief Assistant Professors, Assoc. Professors and Professors) doctoral students, students and administrative staff of higher education institutions. The new Digital Europe vision and the EU Digital Future Strategy link the success of the digital transition to the requirement that new technologies contribute to strengthening democratic, civic and social values. This argues for the topicality of the study seeking the limits of the use of AI in the education and research process, protecting the rights of trainees, members of academic staff and administration in universities.

The authors of this paper bring to the field of doctrinal examination the problem of building an ecosystem of trust in the context of higher education relations. The relevance of the chosen topic is also related to the pace of digitalization of relations in the educational sphere, the penetration of AI in more and more spheres and the emerging cases, both of legal and moral nature. Taken together, these are enough to raise a debate on the problem of trust between parties in AI relationships.

The paper aims to explore the problem of building an ecosystem of trust in the use of AI in education sphere, by analysing both the traditional interrelationships and the transformation brought about by digitalisation and the penetration of AI. In order to achieve the set goal, the main assumptions regarding the ecosystem of trust are examined and a pilot survey among the students at the University of Economics – Varna, Bulgaria, is conducted. It was carried out in January 2023. It first involved in-depth interviews with academic staff representatives, students, and PhD students, followed by a survey among selected student groups. In this regard, the following tasks are outlined: 1. Exploring

the specificities and trends for building an ecosystem of trust in the use of AI in the common European and national educational framework, 2. Conduct a survey on students' perceptions of the use of AI in higher education, 3. Outlining trends following from the penetration of AI in public relations and guidelines for the creation of a regulatory mechanism of the ecosystem of trust. As a result of the study, conclusions and recommendations are drawn for appropriate measures aimed at the international community and national legislation in the use of AI in the educational and research process and adapting them in a way that protects the rights of the individual, with its implementation accompanied by a legal and ethical framework to ensure the rights of the diverse stakeholders.

In order to achieve the set goal and the related research tasks, the authors use the traditional scientific methods for legal research, in particular - induction and deduction, normative and comparative legal analysis, survey research. The material has set subject limitations, which are related to its volume, therefore the authors do not claim to be exhaustive. Emphasis is placed on exploring the opinion of students as one of the parties in these relations. At the same time, the study identifies trends and the placement on the field of doctrine of topical problems that currently have no concrete normative expression or are still under debate in the institutions at European level.

II. ECOSYSTEM OF TRUST

Higher education institutions are destined to follow the traditions and values of society, as well as to innovate and anticipate certain public processes. In this regard, Bulgarian legislation has over a century of history related to the development of universities, which passes through stages following the social historical development [6]. At the present stage, the world, including higher education, is facing challenges unprecedented in their pace and consequences. Higher education institutions implement AI within their academic autonomy because Bulgarian legislation does not contain explicit norms for it.

At the same time, the education system is built on values that are no less significant in the formation of the individual. In order to maintain a balance between the new and the traditional, between technology and the human, an ecosystem of trust is needed when introducing AI in higher education, based on ethical norms characteristic of the academic environment. In the education sector, the process of learning with/through AI is innovative, but the problem that will emerge for the future is the massive use of AI and its impact on society, as there are still no well-established control mechanisms to determine, test and analyze the benefits and/or negative effects of the application of AI [7].

The existing knowledge on AI is fragmented and does not offer a complex theory in the field of higher education that integrates organisational-managerial, social-ethical, information-technological and legal aspects of the problem. AI research in higher education has focused on particular aspects of AI. There is a lack of comprehensive research on the limits of the application of AI in teaching and research with regard to the protection of the rights of students and academic staff, as well as on the applicable ethical norms in the ecosystem of trust in universities.

At European level, it is enshrined in the White Paper on Artificial Intelligence – A European approach to excellence trust (2020). In it, key elements of the trust ecosystem are “fundamental rights, consumer rights and product safety rules”. In this document, the ecosystem of trust is considered in a broad sense, and rights of the persons as part of the fundamental rights of the individual. The use of AI can affect basic and inalienable human rights - equal access and treatment, individual inviolability, freedom of speech and thought, non-discriminatory treatment, confidentiality, and non-biased algorithms for assessing.

The multifaceted nature of the ecosystem of trust institute and its implications in a wide range of social and institutional interrelationships necessitates its limitation for the purposes of this study. Given the latter, and in view of the nature and specificities of legal relationships in the field of education, its relevance can be outlined at several basic levels - the specificity of the institute in terms of the protection of fundamental human rights, as well as some aspects concerning the confidentiality of the information collected, including biometric identification, and also trust in fully automated processes without human supervision. The use of AI in the field of education may directly affect basic and inalienable human rights, including equal access and equal treatment, non-discriminatory treatment, personal integrity, freedom of speech, belief and thought [8]. In this respect, and bearing in mind the framework of key European documents - the Race Equality Directive - the White Paper emphasises the need to address risks where, as it points out, they may be due to shortcomings in the overall design of AI systems in terms of human oversight, or to the use of systems without the ability to address potential gender or age bias (e.g. the system is trained only or predominantly on male data, leading to non-optimal results for women).

A priority in European AI policies is the potential breaches in the collection and processing of personal data and in particular in breach of Regulation (EU) 2016/679 of the European Parliament and of the Council of 27 April 2016 on the protection of natural persons with regard to the processing of personal data

and on the free movement of such data and the Law enforcement Directive in the area of data protection, which should be taken into account in the regulatory framework of the ecosystem of trust. Measures should be taken to avoid direct infringement of privacy, misuse or mishandling of data, restriction of certain freedoms such as freedom of speech or political freedoms. In this respect, while emphasizing the understanding that EU legislation should be built upon with additional legal instruments for adaptation, specific guidelines for data retention and dissemination are outlined.

Building an ecosystem of trust implies adopting requirements to keep records of algorithm development, the data used to train high-risk AI systems so that they can be tracked and checked for potentially problematic actions or decisions by keeping accurate records of the data set used to train and test the AI systems, storing the data itself, keeping records of the methods, processes, and techniques of programming and training, including where relevant for safety and to avoid bias leading to prohibited discrimination.

In this respect, the system of trust should imply the retention of records and datasets for a limited and reasonable period of time, subject to the principles of transparency and regulated access. These rules should be further developed with the utmost specificity as regards their assurance, especially where the application of AI for the purpose of remote biometric identification is concerned. Given the limitless possibilities of this type of applications to affect to the maximum extent the privacy of individuals, it is more than indisputable that future regulatory frameworks of the ecosystem of trust should further develop the General Data Protection Regulation by developing such regulatory safeguards where, as stated, the use of AI for remote biometric identification is only possible where it is “duly justified, proportionate and subject to appropriate safeguards” [9].

Provision should be made for the user to refuse to be the subject of a decision based entirely on automated processing, and for measures to protect his rights and freedoms, including the right to express his views and to challenge the decision with regard to fully automated processes without human supervision [10]. Users should at least receive clear information, in plain language, as to whether they will be subject to fully automated processing or whether there will be human supervision of the process. In case that some of the parties use digital means and others are less familiar with digital technology there is also the risk of affecting the equality in the process.

It is important to identify key areas of impact and specific confidence-building measures, both within the higher education ecosystem and in society in

general. This will contribute to the development of the research capacity of HEIs and to the creation of new knowledge for the implementation of AI in the educational sphere.

The problem of an ecosystem of trust is multifaceted and is reflected in a wide range of social and institutional interactions. The entry of AI into the educational sphere is already a fact. This requires research, knowledge and promotion of the processes in order to adopt them without fear, ensuring harmony in the relationship between lecturers, students and systems with AI. On the other hand, the need for principles to enrich the normative framework are imperative in order to preserve the role of education in the process of personal formation.

Debates about trends with a worrying impact on the social and ethical aspects of social relations focus on three main problems:

- 1) how far autonomy in decision-making should extend to the boundary between human and artificial intelligence,
- 2) who should be responsible for decision-making by autonomous cyber-physical systems in traditional educational relations dominated until recently by purely human capacities and
- 3) what should be the nature and type of responsibility of users of artificial intelligence in the educational sphere given the formation of the knowledge, skills and competencies of learners.

III. SURVEY ON STUDENTS' PERCEPTIONS OF THE USE OF AI IN HIGHER EDUCATION

The use of technology with AI elements in student education is associated with both positive and negative perceptions and evaluations that require further investigation in order to propose solutions in building trust and adequately reflecting them in the management strategies of higher education institutions. Challenges related to the use of AI in the education process, as defined by different interested parties, would contribute to outlining opportunities for its more effective regulation and improving the icaland responsible implementation by higher schools. On the other hand, there is a lack of adequacy of national legislation in responding to the challenges posed by the use of AI in the educational process and the inflexibility of legal norms in regulating. Problems related to the use of AI in the education process are increasingly discussed at different expert and institutional levels, but a comprehensive community framework for defining responsibilities in its use is still lacking

In the survey several questions were asked to students studying at the University of Economics - Varna. Some of them were whether they know the term ecosystem of trust - 71.4% did not know this

term and only 28.6% knew it. The majority of the respondents could not assess to what extent "ecosystem of trust" is possible in the process of higher education with the use of AI - 52.4%, 33.3% answered that they think it is possible, and 14.3% do not consider it possible.

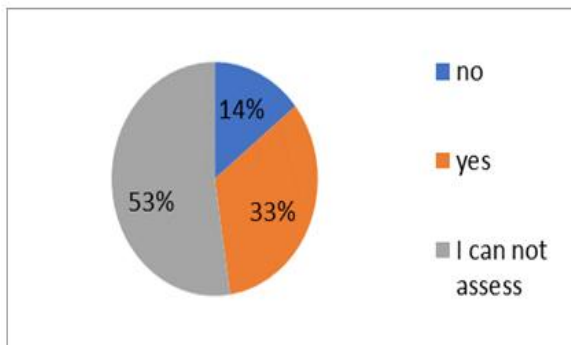


Fig. № 1. Do you think that a "ecosystem of trust" is possible in the higher education process using artificial intelligence. Prepared by the author. Source: own survey research

Students rated their AI knowledge on a scale of 1-5 (1 none – 5 high) around average - 42.9% with 3, 33.3% with 2, 9.5% with 1 and only 4.8% with 5. One of the parties - students - does not consider that they have good knowledge in the field of AI, which is probably the reason for their lack of trust in using AI in the field of education.

The majority of respondents believe that AI is applicable to higher education (47.6% vs. 28.6% who do not), but 71.4% would not trust knowledge provided by AI alone (vs. 23.8% who would).

Regarding evaluation performed by AI, 38.6% think it would be more objective, while 42.9% do not think so and 28.6% cannot assess. Responses to the question whether they would trust such evaluation were:

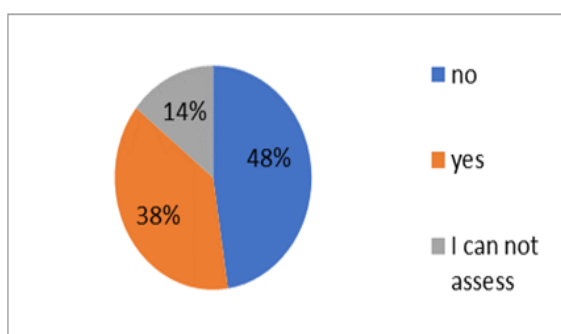


Fig. № 2. Would you trust an evaluation performed by artificial intelligence systems?. Prepared by the author. Source: own survey research

When asked whether they believe that their rights as learners could be violated in a process based entirely on automated processing (by AI), the answers are:

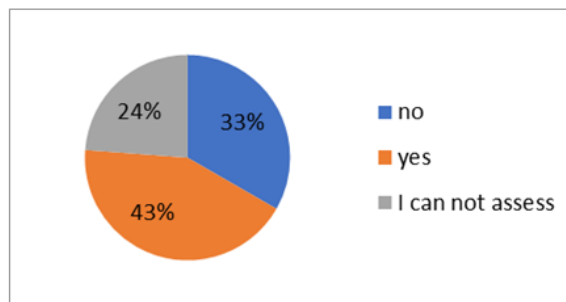


Fig. № 3. Do you think that your rights as a trainee could be violated in a process based entirely on automated processing (by artificial intelligence)? Prepared by the author. Source: own survey research

An equal percentage of respondents answered that they needed a guarantee to protect their rights or that they could not assess - 42.9% and only 14.3% thought they did not need one.

According to the results of the survey, the majority of students accepted that AI has become part of the educational process, but they are not willing to fully trust it and believe that their rights could be violated. They need safeguards to protect their rights.

In this regard, safeguards should be provided at the level of law or internal regulations of higher education institutions to protect the rights of parties in processes related to AI. Reasonable time limits and guarantees that personal data will be processed, used and stored in accordance with legal requirements as well as that they will be provided with reliable protection should be established. Parties must be explicitly notified when processes are carried out entirely by automation, without human intervention. Efforts should also be made to familiarise the parties with the capabilities of AI, how it works and how it is applied. This would increase their trust in its wider application in higher education.

In order to achieve an ecosystem of trust, normative frameworks regulating the relationships in the higher education ecosystem should be put in place. In the first instance, this should be done in international instruments, given the entering of AI in all spheres of the life. At the next level, we believe that the national legal framework should be updated, in particular the Law on Higher Education and the Law on the Development of Academic Staff in the Republic of Bulgaria, as well as the relevant secondary regulations. Important in this legislative change is the introduction of principles regulating the ratio of the use of AI in the educational process and preserving the leading role of the human in it.

We also consider significant the introduction of new types of rights for the persons involved in the educational process, both the trainees (students and postgraduates) and the teaching staff.

Next, the introduction of regulatory mechanisms, as well as liability for misconduct and damage caused by AI.

The detailed presentation of the legislative proposals are the subject of future research work by the authors, which, given the limited scope of this report, do not find a place in this paper.

The role of universities is not unimportant in the process of building an ecosystem of trust. On the contrary, given their specificity, they are best placed in their internal acts to impose rules and control mechanisms ensuring good interaction between the different components of the system.

IV. CONCLUSION

On the basis of the research conducted, the authors of the report raise in the field of scientific debates a number of problems related to building an ecosystem of trust in the use of AI in higher education.

Undoubtedly, AI has entered both the educational and research process and is at every moment changing traditional relationships, transforming rights and creating new relationships that have yet to be subject to legal regulation. At the same time, a set of norms of different nature-ethical, moral, social - operate in higher education institutions, which already regulate social relations and build new values that are transmitted through the educational process to the trainees. These processes call for urgent measures, locally, nationally and internationally, to introduce new principles of communication, to preserve rights and to regulate new ones.

What is needed is a qualitatively different conception of the development of social relations, adapted to the new realities - both benefits and threats of the digital environment. European and national normative frameworks should be established to guarantee the use of AI in a fair, safe, and rights- and dignity-preserving manner, establishing institutes for additional normative guarantees for safe AI, which have yet to adapt new qualitative mechanisms to adequately

respond to the protection of individuals' rights, preserving (building) trust in the use of AI, and incorporating norms to ensure the preservation of balance in relations between parties and the building of ecosystem of trust in using AI.

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