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Tendencies and Elements of Digitalization in Albanian Universities

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Abstract

The increase in the competitiveness of subjects in the field of Albanian education, the construction of university ranking systems and the continuous flow of students because of demographic indicators have made it necessary to introduce the elements of university 4.0 in higher education institutions. For this, it is indispensable not only to change the teaching and learning process, because this is always necessary, but above all, the transformation and modernization of the digital material base, the widest possible use of digital platforms, digital classrooms, digital laboratories, and many other elements are required. In this paper we try to identify and analyze the elements of University 4.0 in Albania. The results of a research that includes a representative sample of more than 40% of accredited Albanian PU (Private Universities) until 2022 are presented at the end of the paper. They are interviewed to document their perception of the University 4.0 elements in their institutions. After this, with a structured survey according to the relevant areas of digitization identified in the EU "Next generation" program for education, indicators were built that evidence the elements of university 4.0. in these same institutions. The presented data allow us to offer some initial reflections on the scale of the digital transition of Albanian Universities and the acceleration of this process in the field of education and secondary education.

Keywords: digital transition, digital transformation, university 4.0, digital laboratories, digital platforms

1. Introduction

All the economic phenomena of the development of the investment market today are conditioned more and more by the development of the educational market and the level of knowledge. The most dynamic and important part of this market is directly related to universities and more specifically to the first two levels of university education. For this reason, business cooperation is necessary in the field of education and science, not only for the economic progress of a country but also for its internationalization and integration in larger markets. This means that there could not be an industry 4.0 in a country where there is no university 4.0. The integration of the university market in the general market of a country is now a development necessity. In this paper, we will try to precisely

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analyze this problem, evaluating the elements of University 4.0 in Albanian Universities and defining and suggesting directions for the growth of this process with the aim of integrating the Albanian university market into the European and world market.

2. Theoretical Achievements in Problem Analysis

In the modern conception, University 4.0 is considered a cultural action that represents the use of digital technologies in terms of teaching and learning without the need for a physical location. Not in vain, many authors consider this concept as an "open space" for everyone. This process in this space will guarantee the positioning of learning and understanding of all phenomena in the digital age. There have been many reconstructions of the experiences of individual universities (see for example Bruschi, 2020; Luppi et alii 2020) that they associate this phenomenon more with distant learning. There are not a few who have made specific contributions to some possible models of digitization and the construction of distance learning. (Ferri 2019). The main reflection during the pandemic was mainly focused on answering these essential questions: a) how universities have been able to meet the challenge of distance learning, b) how much of the experience produced during the pandemic in the use of digital technologies should become common practice in the delivery of teaching after the end of emergency (Moscati 2020), etc. It was also analyzed the fact of what results it brought to the students learning workload and what opportunities were opened for their training (Mattarelli 2021), distance learning experience (Ramella and Rostan 2022). All the above authors prove with their studies that the digital transition was greatly stimulated by the covid 19 pandemic. At the same time, everyone agrees that this process should continue and will continue because the university market itself requires it. Many call it the beginning of the era of universities 4.0.

In Albania, all subjects of university education had to face a rather problematic digital competition due to the structure of this market. This was felt more by the institutions with private financing, which cover about 30% of the market, and much less by the institutions with state financing. The literature has shown that social inequalities have generally worsened after the pandemic and could not help but be reflected in the university market as well. The same thing that is theoretically accepted by studies of (Bazzoli et alii 2021; Pasta 2020, Cappa 2022) also happened in Albania because there are entities with public funding within a market (State Universities) and with private financing (Private Universities). In this respect, digitization has become a very strong weapon of the subject's competitiveness in the market and, consequently, the number of its students.

In this paper, by collecting, at least partially, the thoughts and reflections that come from the literature on the relationship between digitization processes in the world of teaching, we will try to identify the digital tools of university education in the Albanian market. For this, we need to define some areas and some indicators so that we can measure the current stage of development of the digitization process. Our main goal is not to measure the digitization process of Albanian university educational institutions, but to identify some indicators of the digital transition that these subjects are going through.

We begin with an attempt to define a more specific definition of what a digitization process is. Digitalization is usually understood as a process of introducing and spreading digital technologies in an organization including the changes that derive from it and accompany it. In our opinion, even among the different specialized literature that deals with this topic, there is no consensus on how to define these changes. In the field of business consulting, for example, the use of the terms "digital transition" and "digital transformation" is widespread, but they are associated with different and sometimes contradictory meanings. According to some, digital transition is a process of incremental improvement of existing tools, processes and technologies, a reaction to changes occurring in the economic environment. In short, it is considered a way of doing things according to the "old" models, but with "new" technologies. Therefore, the term transition would refer to a gradual process of adopting and integrating digital technologies in the organization, with the aim of improving the efficiency of the processes and the quality of the services provided, without necessarily radically

changing the structure and culture of the organization. (Casalino et alii 2021). Digital transformation, on the other hand, is considered a process that implies a proactive approach able to identify and seize new opportunities, requiring a completely new way of thinking and closely related to innovation (Yerramsetty 2017).

There are many other authors where digital transformation is, a process that goes beyond the simple adoption of new technologies within an organization, it favors new ways of working and thinking using digital technologies and encouraging innovation.

It necessarily leads to a new form of sustainable organizational structure, while the digital transition is an open and constantly evolving process, therefore able to keep pace with future technological changes (Agile Elephant 2006, Henko 2019). In short, it can be said that digital transformation and digital transition are two concepts related to the adoption and integration of digital technologies in the corporate and organizational context, but with different shades of meaning. Analyzing the use of the two terms in recent literature on social change linked to technological and environmental change (Hölscher et alii 2018), it was noted that in some cases the terms "transformation" and "transition" are used interchangeably to show broad-based and diverse radical changes involving innovation. Different and sometimes opposite meanings are attributed to the two terms in many other works. Different scientific communities often prefer one of the two terms in their research. However, at one point, the different authors consulted on this topic seem to basically have an interesting convergence. Any transformational organizational process or the slow transition to a greater prevalence of digital technologies in daily operations requires two conditions: a) adequate basic training of all operators involved and b) building a broad consensus in support of new processes to overcome inertia as a typical phenomenon for any organizational change (Casalino et alii 2021).

Regarding the transition and transformation, it is good to distinguish another element of the definition of open distant learning that we intend to use as a specific indicator of the digitization process and distant education. Weather (Johnson et alii 2020, Perla et alii 2020, Yang & Huang 2021) consider online education "A form of distant education in which a course or program is intentionally designed in advance to be delivered entirely online. A faculty in distant education uses pedagogical strategies for teaching, student engagement, and assessment that are specific to learning in a virtual environment. (Bates 2020). So, in the first case we have a digital transition, in the second case a digital transformation. In a nutshell, it can be said that digital transformation and digital transition are two concepts related to the adoption and integration of digital technologies in the functional and organizational context, but with different nuances, especially in the evaluation systems.

As a result, we must distinguish the evaluation process of the digital transition from that of the digital transformation, to reach the conclusion that the transition brings elements of the university 4.0, while the transformation a change of a system and it's replace with another one. In this paper, we will try to analyze the elements that accompany the transition of a process (elements of University 4.0) that transform and create in their end the transformation of a subject into University 4.0.

3. Methodology

If we return to understanding University 4.0 as a new model of teaching, there are some important considerations that lead universities to review their systems of university offers and products. The competition between institutions today is conditioned by the quality of teaching, in which the infrastructures have a great weight in the final assessment that leads the student to one university and not to another. From this point of view, in addition to the quality of teaching, the quality of the infrastructure and teaching resources also affects the choice of students and their families regarding university activities. In fact, we are increasingly talking about university 4.0 in the service of a forward-looking country, integrating a variety of multimedia technologies into learning paths. All seek the promotion of interactive environments, aimed at fostering the development of knowledge and ideas according to a more collaborative and active approach, compared to traditional teaching.

The transition from the blackboard of classic classrooms to integrated LIM screens, the use of interactive video projectors, multifunctional wireless printers, the latest models of 3D printers, the intensive use of new multimedia stations, etc., serve to make the University 4.0 the cradle of knowledge and science, encouraging new learning paths and new learning models. All these processes and many others are part of the digital transition.

Broadband, Wi-FI, Transmission technologies and new storage resources have, in fact, become an integral part of the university infrastructure, which, thanks to new software management platforms, in the presence of central servers or in the cloud, can benefit from new storage resources of applications that improve the governance of education, teaching and learning systems. In this way, we aim to provide students with more and more personalized study paths thanks to value-added innovation. This makes all the teaching and learning processes more efficient, the management activities of academic secretaries more simplified and the practical use of knowledge more real. We have tried to measure and compare all these actions, part of a digital transition as well as evaluate their trends in the Albanian market, for the near future.

In this study, we tried to build some indicators to evaluate some elements of university 4.0 in Albania, considering all the universities accredited by the relevant structures.

To evaluate these elements, we have conducted a questionnaire in the form of a structured interview with the Rectors, Administrators or Owners of 24 Albanian PU's (Private Universities) that are part of the university market. In this survey, we have built indicators for 4 evaluation fields and 8 sub-fields for more specific numerical indicators (each area has 2 sub-areas). On the other hand, for each field and subfield, without performing the analytical evaluation, explaining the questionnaire, we asked the head of the institution to give his perception before the structured interview with analytical evaluation. It was explained to him that his evaluation must be within the evaluation intervals of the questionnaire system and will be compared at the end with the analytical evaluation of the questionnaire. In this way, an evaluation of the difference in the perception of the 4.0 elements in the respective universities and their evaluation by the structured interview questionnaire system will be obtained. More concretely, the combination of the evaluation of the fields and sub-fields of the survey, compared with the preliminary evaluation of their perception, realizes the purpose of the survey. 4 fields have beeb selected and more specifically.

3.1 Digitization of the administrative part of the University

✓ Subfield I/1. The degree of digitalization of the student's relationship with the academic secretary, the teaching process, and the teachers.
✓ Subfield I/2. The degree of digitization of the institution with other educational institutions and line ministries.

3.2 Digital infrastructure

✓ Subfield II/1. The rate of broadband usage in internet connections within the institution
✓ Subfield II/2. The scale of digital classroom equipment. The existence of digital tables, digital laboratories, laboratories with robotics elements, 3D printers, etc.

3.3 Digital competencies of teachers and students

✓ Subfield III/1. The rate of use of digital standards for learning and teaching.
✓ Subfield III/2. The degree of use of digital standards in texts, books, programs (software) and didactic materials.

3.4 *Training and professional development of academic staff*

✓ Subfield IV/1. The scale of awareness and use by students and teachers of the digital infrastructure.
✓ Subfield IV/1. The scale of training and approach of the professional preparation of new lecturers with the institution's digital capabilities.

All evaluation fields have two sub-fields, and each such area consists of four questions. Each question has within it 4 answer alternatives and each answer alternative can be evaluated from 1 to 4 points according to the degree of completion of the request from the lowest to the highest. This means that each question can have 1-4 points and each section can receive 4 to 16 points. In this way, the field with 2 subfields and in total can evaluate the system from 8 to 32 points. The most interesting element of this questionnaire is that the director interviewed first gives his perception in the evaluation of each sub-field and then answers the questions. Then he understands how much and where his perception differs from reality measured according to this method. The concept of university 4.0 is already known in Albania, but its theoretical treatment is rarely accompanied by specific indicators. The application of the evaluation model of the elements of the university 4.0 in the conditions of the Albanian university market methodologically enters the standard used by certain researchers, but the degree and level of the digital revolution in general is low. This does not allow comparison outside of this market of survey results. Regardless of this, which constitutes a limitation of the study, the level of analysis in each field of the conducted survey allows to be evaluated for the elements of university 4.0, for the selected fields.
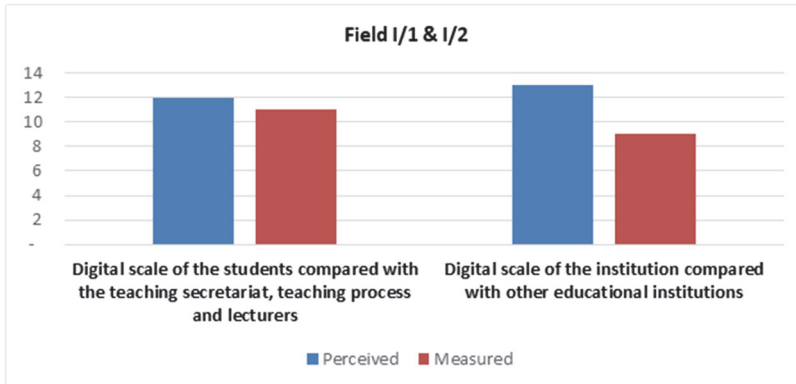
4. Results and Discussions

If we look at the results of the four fields, we will understand that the perception is higher than the measured reality of the University 4.0 elements. More specifically, the differences can be seen in the graph below.
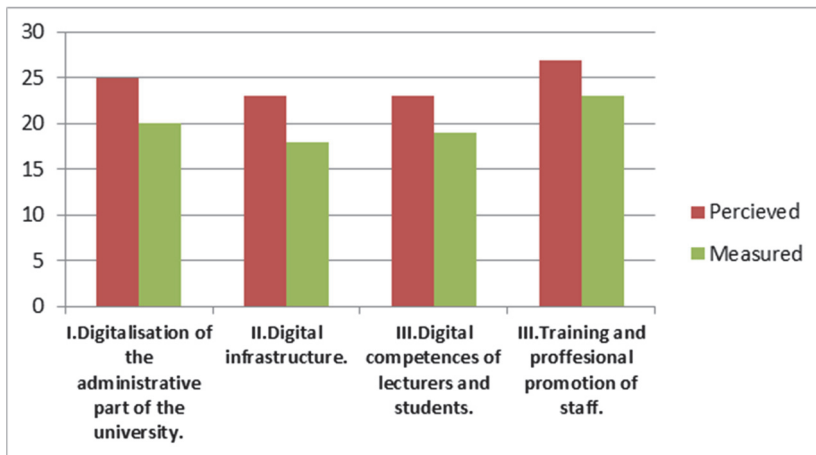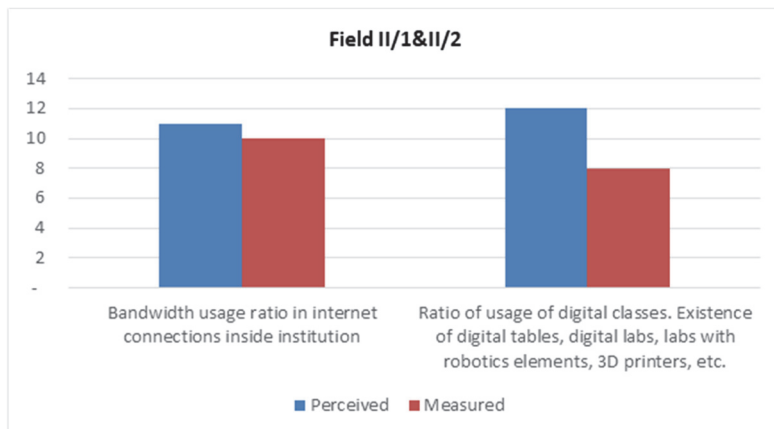

Graph 1.

The difference between perception and the measured reality is a little too constant for each field, which shows that the universities are satisfied with the level of digitization and have limited motivation to increase it by rapid increases.

Let's take a closer look at the level of perceived difference and the reality in the subfields.

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Graph 2:

If we analyze the scale of digitization of university management in the relations with students and the teaching secretariat, we notice that 87% of universities have management software. In general, these software contain the registration of students in each exam, the electronic register of each class, the control of attendance and the right to enter the exam, the entire evaluation system and many other elements that facilitate the work of lectureres and the teaching secretary. In general, these software are copies of European universities and, as a result, express a satisfactory level of service to the student and data storage. This is also evident in the graph because it is one of the areas where the level of perception is lower than reality. The element that limits the full management of these programs is the connection of this data with the student's entry data at the that is, with the data of secondary schools and the data of state institutions that are still in paper form. This is the reason that in the subfield of I/2, there is a huge difference between the level of perception and real measurement.
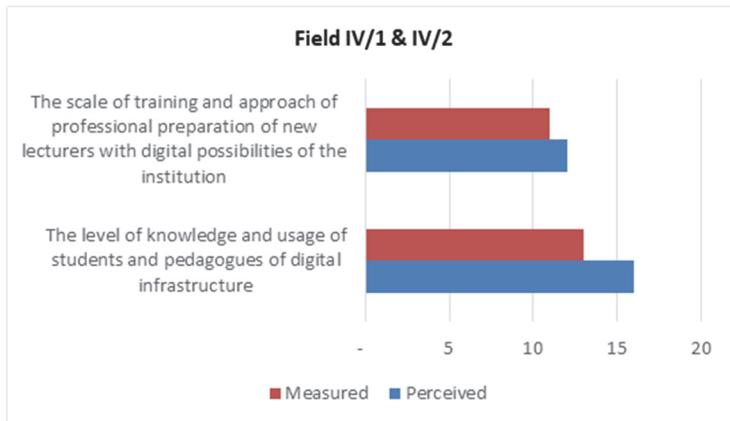

Graph 3:

In the analysis of the second field in both cases, the perceived level of the subfieldss is more sensitive and lower than the measured one, and this is because investments in digital classrooms in relation to the number of students still have great opportunities for improvement. The Internet speed was not to the maximum of the possibilities that different operators offered in the market, and the possibility of

improvement, although there were significant costs, could be realized. Regarding the third field in terms of the digitization of didactic materials, software books, etc., the advances in the faculties of computer science are significant and consequently the investments in them, while the other sciences still lagg behind. This is also seen in institutions that have an informatics faculty and in institutions that do not have faculties of this profile. An important step evaluated in this field is the progress made in the direction of digital libraries and lecturers' portals. Digital libraries have greatly enriched all areas of education, and above all, they have given students the opportunity to access all library sites in their areas with their email addresses for as long as they are students. The part that is left behind is the creation and uploading of video lectures for each subject on the teachers' portals. In a few universities, there are videos of lectures conducted in the classroom, but their quality and structure in most cases is improvised. The concrete results of this section can be found in the graph below.
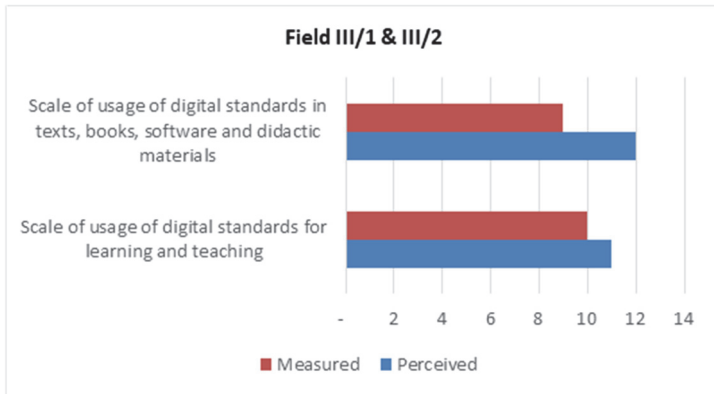
Graph 4:

The training and professional growth of academic staff in its two subfields evidences the fact that the growth of human capital in albanian universities is an important element and the entire process of investments in digital infrastructure is accompanied by continuous training of academic staff. This fact is also evident in the corresponding graph.

Graph 5:

1. This is the first study that analyses the actual state of the digitalization of Albanian universities.

It is anticipated that forthcoming and more detailed research will be conducted to assess the evolution of digital infrastructure within these academic institutions.

The Albanian Government has allocated specific funds in the 2014 budget for the Albanian Universities to support the programs about the development of education 4.0.

2. It is not feasible to draw comparisons between the countries of the southwestern Balkans and European nations in terms of digitalization in the university education.

The European program "Nextgeneration EU" boasts substantial financial resources for this process, whereas in the Western Balkans the process primarily relies on investments from private institutions. Consequently, it has to be emphasized that in the future studies comparisons of the digital level in the university education can be carried out only in countries such as Albania, Kosovo, and North Macedonia.

5. Conclusions

At the end of this observation, considering its limitations, the following conclusions can be reached:

1. The level of perception by the leaders of Albanian educational institutions is higher than their measured level, which shows that it is not intelligence that pushes forward the elements of university 4.0, but the demands of the university market and competition among universities.
2. The scale of digitization of other educational institutions lags the digitization of universities. In this direction, the state should, on the one hand, increase the digitization of the state institutions of education but at the same time, with certain policies, influence the digitization of pre-university and secondary education, not forgetting the primary one.
3. The scale of digital classroom equipment, the existence of digital tables, digital laboratories, laboratories with robotics elements, 3D printers, etc., is still limited, but the fact that many applications have been made for projects to develop these digital elements is positive.
4. The scale of use of digital standards for learning and teaching has increased the objectivity of student evaluation, their creative ability, and their entrepreneurial spirit. Everyone is convinced that the digitization of universities is one of the most important processes of the digital revolution in all fields, even in Albania.

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