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DIGITAL UNIVERSITY CAMPUS – CHANGE THE EDUCATION SYSTEM APPROACH TO MEET THE 21ST CENTURY NEEDS

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Abstract:
Technologies appear because of the quality of the education and research process, and human intelligence completes a successful future. The latest events of 2020 have shown us the benefits of technologies created by scientists, in the innovative approach to university education - the transition from teaching and conventional research to the digital campus, through EdTech. Actual movements in socio-economic life around the world impose e-learning and e-presence. However, moving digital is more than online teaching. Present research analysis was conducted on two different types of institutions: public and private universities from Europe, with different teaching and learning system: American and European. Information was congregated through face-to-face and online interaction with representative people from universities. The present research paper aims to demonstrate how a digital campus, with all its aspects, can perform a crucial role in enriching the university campus's structure and culture to ensure the quality assurance of teaching, research, and administrative management using actual innovative technologies.

Keywords: digital campus, education, organizational structure change, management of changes

1. Introduction

The scientific part in the field of society's development has always been defined by researchers and professors. The members of the academic community have led the society up to the actual times and continue their developments for the future. Economic development is fully supported by educational institutions, where the process of learning, research and innovation can take place face to face, on university campus, using its premises' facilities, or online, using digital facilities. Digital communication facilities are developing people's professional field. Therefore, humans must be supporters of the

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development of future society. And, at the same time, humans need financial support to access higher education (Alsaadat, 2020). Professional and intellectual capacities certainly lead to the involvement of the young generation for the development of society in order to create sustainable added value for a balanced and lasting economic development, in conditions of social security.

The system of transmitting ideas between people, at a scientific level, can be transposed into a professional framework, using databases, time and space, which can accurately provide the information needed to organize the personal career agenda, as well as the development path of business.

As the technologies evaluate and society's needs are changed, the university organizational structure and culture must change and adapt itself. Information and digital access to databases can help define any process / project / activity, providing a clear picture of the entire cycle of activities from start to finish. At the same time, the use of digital systems, on a consistent educational basis, offers the possibility to see the field of the future society where it will be, with all the elements behind it. Education will always play an important role in any country sustainable economy and a healthy environment (Moşteanu, 2020a). An educated and knowledge equipped student leads to an educated family, and an educated family means an educated society. Consequently, an educated society understand the importance of investment in developing the education sector, as it can help the whole society to develop and grow in a sustainable way (see Figure 1).

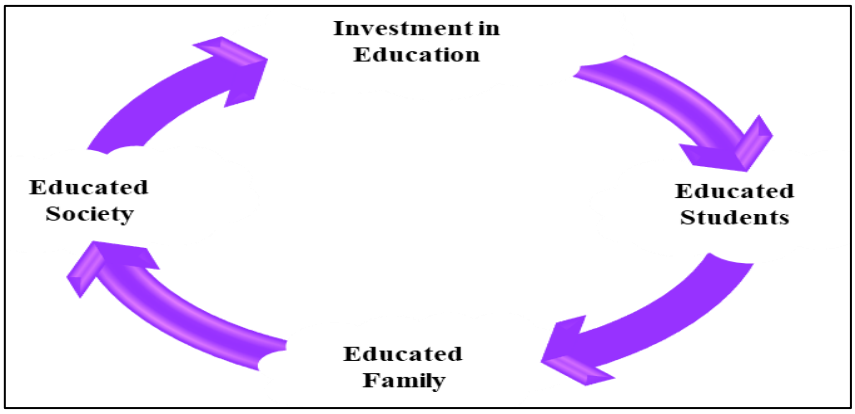

Figure 1: Return of the Investment in Education (Moşteanu, 2020f)

From this point further, the present research will present the necessity and the benefits of investment in campus digitalization, both from students and universities perspective.

2. Literature Review

Higher education history records more than 1600 years now. The first university was recorded in Morocco, in year 859 (it is about University of Al-Karaouine, also known as Al-Quaraouiyine University, which it was founded by Fatima al-Fihri as a community

mosque with an associated school. The university still exists today). Since then and till present time, according to the Webometrics database (Ranking Web Universities), in January 2020, around the world, there are noted 24,429 universities. According with International Association of Universities (2020) 30 countries record at least 100 universities (public and private) and the supremacy is held by United Stated (2116 universities), followed by Mexico, Philippines, Indonesia, Brazil and China all with more than 1000 universities (see Figure 2). Morocco was the first country in which was established the first university. Now records 157 universities, out of which 116 are private universities. The United states oldest institution is Harvard, established in 1636, 777 years later that the first in Morocco, it is one of the most worldwide recognized, and from the beginning was private, not public one. The oldest public university in the world is recorded in Italy, University of Bologna, in year 1088 (in 2020, According to International Association of Universities, Italy register 99 universities, out of which 70 are public ones).

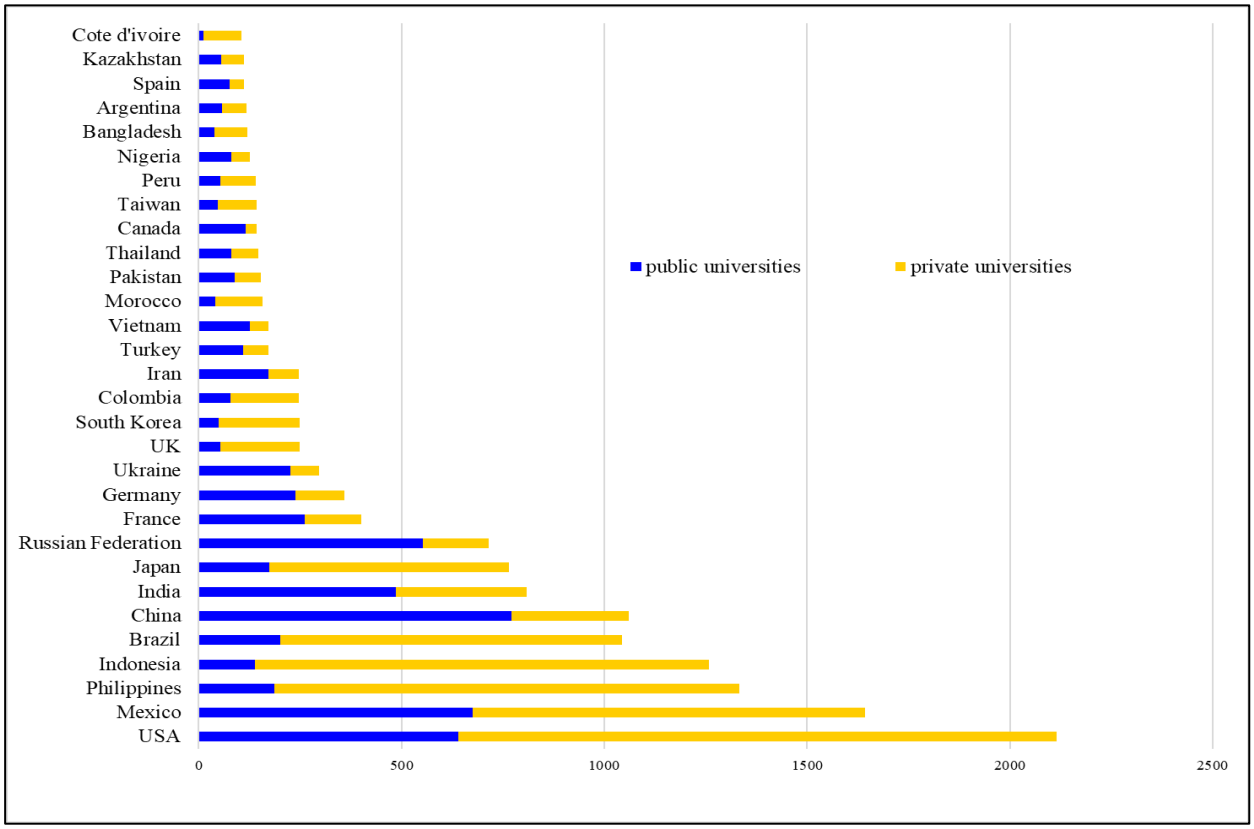

Figure 2: Countries which records more than 100 universities in November 2020

Having in a view the current situation, Covid-19, and social distancing restrictions, majority of universities are offering face-to-face teaching and learning programs.

As a general definition for a university, academicians agreed that it is an institution of higher education and research, which, based on the students' performance, it awards academic degrees/diplomas in various academic disciplines or specializations. However, the emergence of new requirements on the labour market, industrial reforms and the development and implementation of new technologies have been, and still are,

challenges for professors in all specializations. Teaching methods have gradually improved, to meet the needs of labour market requirements, the social conditions travel restrictions, as well as the perceptions and needs of students and for those eager for professional development (Booth, 1993; Moşteanu & Faccia, 2020a; Moşteanu, 2020b).

Though, online teaching started in years 1900, in the same time with the spread of internet and the worldwide web, and now are more than 28,000 online degrees from accredited online universities and colleges (University of People, 2020). Online and long-distance teaching and professional development appear to be more approachable in a social distancing restriction, for example in a pandemic crisis caused by Covid-19, in year 2020 (Moşteanu et al., 2020a), or financial and travel difficulties.

Although even before 2020 pandemic crisis, there was already a trend in adoption of teaching and learning new technology, developing and offering new programs/specializations in artificial intelligence, digital systems, cybersecurity and e-marketing, after Covid-19 crisis, the global EdTech investments showed a dedicated budget allocation, which reached US$18.66 billion in 2019, and the overall market for online is predictable to reach US$350 billion by 2025. We may say that Covid-19 stimulated and urged all education institutions to make a step further and adopt digitalization and new learning and teaching platforms faster than it was previously covered in their business or strategic plan (Li/Lalani 2020; Moşteanu, 2019a; Faccia et al., 2019).

Nowadays, online education and digital campus is no longer a trend, it is mainstream. Therefore, changing the university organizational structure and culture and adopting the digital campus, in its whole concept, can help to have a continuity for the education process in the era of technology and socio-financial uncertainty. Since year 859 and till present investment in higher education is a continuous process which require public and private financial budget allocations. As a general understanding, investment is an activity used by the people to increase wealth, develop a business, and improve the economy. Generally, investors run the money in a way that there will be gain (Moşteanu, 2019b; Moşteanu et al., 2019). Investment in education is considered an advance of the gross domestic product. The product and profit of these investments are recorded / observed in the long run and consist in the high degree of professional qualification and education of the entire society (Moşteanu 2011a, b). Universities are institutions of higher education in which human capital improvement takes place, typically through the process of teaching, learning, research and innovation. Therefore, an investment in developing the university campus based on modern technologies consequently benefits the entire economy. Moreover, the investment in a human capital development is an intelligent and sustainable instrument to be used for increasing the economic growth (Dyason & Kleynhans 2017; Neeliah & Seetanah, 2016; Moşteanu, 2011c).

A university, and a university campus, could influence the economy through its sectoral links (Dyason & Kleynhans, 2017). All economic sectors and all social categories benefit directly and/or indirectly from the expenses incurred by a university campus, whether private or public. An informed and educated society will understand better the

effect of their decisions, regardless those decision is related to the private or public actions.

New technologies and digital systems have dramatically changed the organizations' structure and culture, labour market skills' requirements, and marketing environments. Whether it presents an opportunity, a test, or a need for survival, addressing this challenge depends on how organizations approach it strategically (Quinton et al., 2018).

Digital technologies have transformed the way organizations and consumers interact and transform value (Yadav & Pavlou, 2014). For example, web 2.0 has transformed the way people access information, communicate with each other, and experience products and services (Hamill, 2010); 3D printing has changed the way goods are produced and consumed (Moşteanu, 2020c); the Internet of Things has revolutionized the way individuals interact with physical environments; application-based mobile banking helps with digital financial transactions (Moşteanu et al., 2020a; Moşteanu, 2020d); and, universities offer training, learning and accomplishments of new skills, through digital communication (Moşteanu, 2011d; Moşteanu et al., 2020b; Moşteanu, 2020d; Hazemi, Hailes & Wilbur, 2012). Therefore, digitalization is not a new phenomenon, and in conditions of social distancing, such as the Covid-19 pandemic of 2020, it continues to evolve and produce new effects on the organization's environment, with more emphasis on the educational system. And this because, despite disrupted routine, the whole economy needs skilled people in the years to come.

Digitalization of university campus and the need of reshaping and funding the higher education systems, it was discussed in many academic research (Moşteanu, 2003; Siemens, Gašević & Dawson, 2015), with accent of the importance of the human factors: social interaction, well-designed learning experiences, participatory pedagogy, supportive teaching presence, and effective techniques for using technology to support learning (Margaryan, Littlejohn & Vojt, 2011; Frau-Meigs & Bossu, 2017), and not only socializing.

3. Material and Methods

The present work paper is an exploratory research, based on investigative procedures. This study was conducted on two different types of institutions: public and private universities from Europe, with different teaching and learning system: American and European. Information was congregated through face-to-face and online interaction with representative people from universities. University representatives were asked the following questions: existence of a risk management policy; awareness of employees about work remoting, in case of disaster, existence of a business continuity plan and an emergency reserve fund; and, the speed of adapting the organizational structure and culture to the changes of the environment, as well as the benefits of using the new digital technologies to ensure the continuity of the business and to develop or improve specialization programs to meet labour market digital skills required. Based on this, the

present paper is a fundamental and qualitative research, which aims to identify the main changes that may occur during and after disaster, or main changes to face the new technologies requirements and it presents the possible ways of improving the organizational structure and culture approach in sense of university campus digitalization.

4. Results and Discussion

4.1. Digital University Campus – Organization structure and Culture's perception

Despite the fact that digitalization become a common word and part of our daily life, the research noticed that digital campus means more than e-learning, it includes also e-presence and e-university administration (Moşteanu & Faccia & Cavaliere, 2020c), and involve all academic and administrative activities conducted by the university, and is not limit to teaching, learning and research perspective (Moşteanu, 2020c, Dynasign Campus Live in Action, 2014).

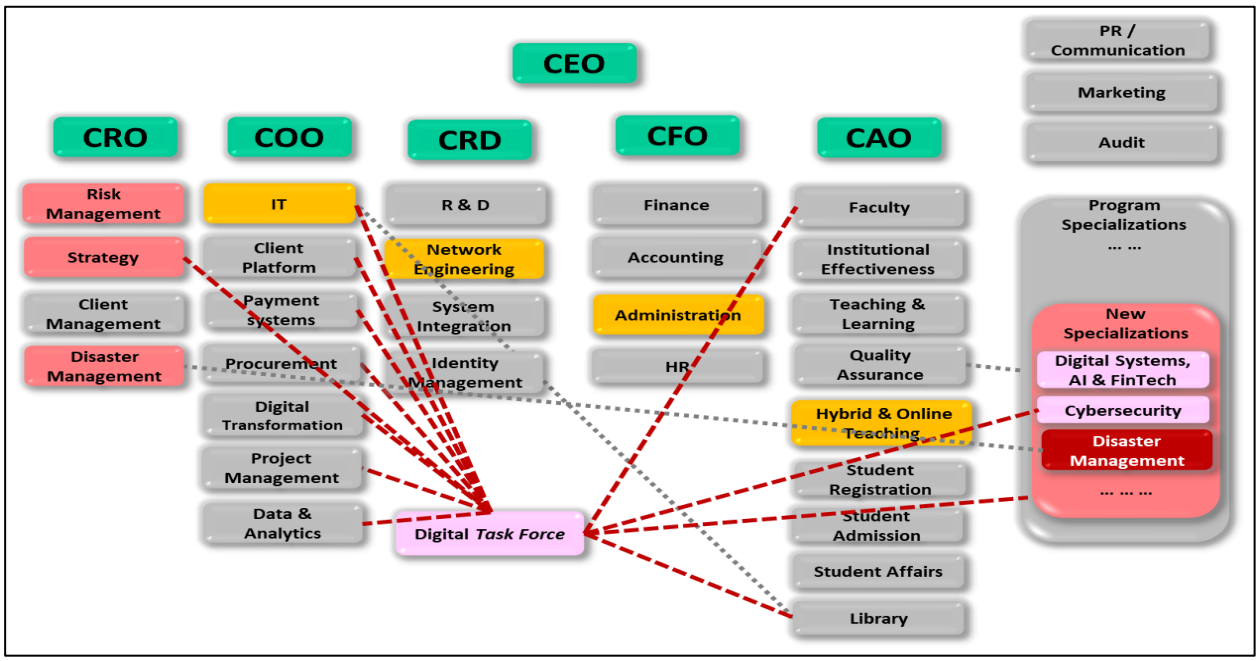

Figure 3: Organizational structure of a university (Moşteanu, 2020c)

When comes about universities, the research has revealed that, in the current time, distance learning or online education is commonplace. More than that, in the event of a disaster, working/learning remotely from face-to-face to online education is very easy and fast. All we need is to have a good internet access and a good training/orientation session to learn, understand and manage to use e-communications or Learning Management System (LMS) tools (e.g. emails, MS Teams, Zoom, Skype, Canvas, Blackboard).

At the organizational level, the risk of a disaster can be taken over by the risk management department or it can be created another, dedicated to management of

disaster, which combines experts from IT, institutional administration, risk management, marketing, communication, and academic administration. Digitalization helps as well. It is related to the implementation of new technologies. In case of university, digitalization requires communication and IT skills (see Figures 3 and 4). This can be very easy achieved by connecting each one of employee, faculty and student to a PC, from home. However, in an academic industry, any change in the general environment, such a disaster which comes with social and travel restrictions, is forcing the university, as an organization working with people, to adapt and/or chance its structure and culture approach and to create a new strategy to keep the process of education ongoing. More than this, any event should be taken as an opportunity for improvement. In this case, Covid-19 underlined the necessity to come (if the university didn't do it before) with innovative ideas for new program specializations or new courses which will able the students to have digital skills and competences.

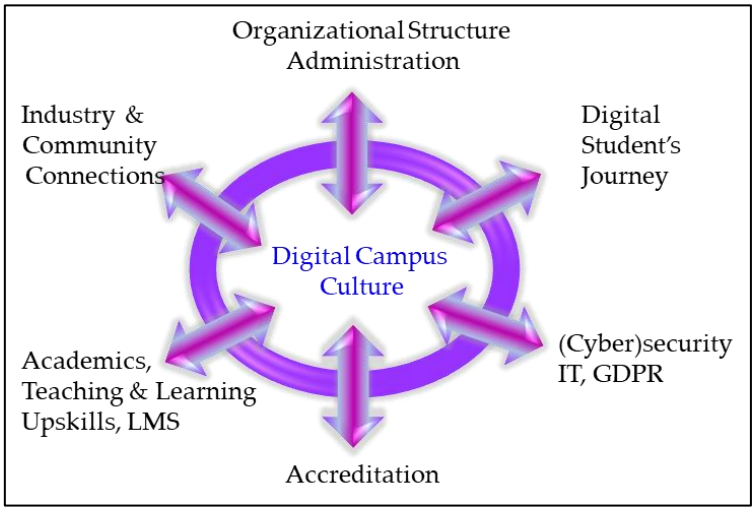

Figure 4: Digital Campus' architecture (Moşteanu, 2020g)

Digital Campus development is an important part of university expansion and should meet the need of information technology development in higher education (Campus Management Corporation, 2020). Currently, there is no standard framework for the digital campus, and as technology advances, the framework will evolve organically. However, to begin the journey to provide students with an experience on the digital campus, educational institutions need to change their organizational structure and culture, and incorporate: visual experience and exposure, a high-performance IT system and the implementation of digital systems in all institutional levels (admission, finance, administration, research, courses and much more).

The system architecture of Digital Campus can be divided into 6 parts – Academics, Accreditation, Industry and Community Connection, Digital Student Journey, Administration, and IT & Security (see Figure 3). Every part is better to be intercorrelated with each other to achieve the integrity and the unity of the whole university system.

As the labor market and socio-economic needs are changing continuously, and world moves towards smart cities focusing on digital solutions for a more viable and sustainable future, higher education institutions are expected not to be left behind (Moşteanu, 2020e). According with Campus Management Corporation all these 6 parts have their importance and they cannot work separately (Moşteanu, 2020e): Academics include learning management systems; virtual/blended and personalized learning methods; learning analytics; assessment models; 3rd party content and apps; learning aids including library and CMS. Accreditation, the recognition of quality assurance of teaching and learning is better to include academics and institutional performance (teaching and research); real time reports; infrastructure; raking; quality management systems; governance and regulation mandates; real time reports; and, compliance data. Industry and Community Connections is vital to be part of teaching and research process. They help the university to be updated to the labor market and the whole economy needs in terms of skills and knowledge, also they help the young graduated students to integrate themselves into society, through internships, workplaces and research projects developments. In this regard, the university supposed to have on its portal dedicated area to link with industry and community research projects; employment hubs; grants; and alumni. Digital student journey connects the student with all services and facilities offered by the university, provides access to identity management, ensure connection with the campus remotely. Administration and It and Security are the services management area which include human resource (both academics and administrators); finance; accounting; procurement; welfare; support functions; secure hardware; mobility/apps; 3rd party content; and secure data warehouse.

4.2. Digital University Campus Structure – students' perception

The present study on the digital campus services revealed that the student's journey within Digital campus imply more aspects than what we know as e-teaching and learning or EdTech, it is imply e-presence, e-administrative services, e-finance, and others (see Figure 5). Using e-communication tools, student' academic journey goes through many stages: Application Management & Enrolment; Advising, Registration & Class Schedule; Class work & Learning resources access; Thematic Centres, Networking & Socializing; Exams & Grades; and, Graduation & Alumni. All these activities can be easily conducted online.

Application Management & Enrolment area it is particularly important. On virtual mode, the student has its first contact with the university. The university portal is better to be specific, attractive, and friendly to use, to let the student to know which can be his learning plan, from the enrolment to graduation. Enrolment area is better to offer online services as: documents verification, students dossier acceptance; link for fee payments (all payments are better to be conducted online, to avoid any inconvenience); presentations of universities facilities (hostel, parking, sponsored educational participations, or other similar); and, advising or counselling (which has to be consistent

from the first day till graduation). Once the student is enrolled, he/she will have assigned an email (university email address) and free access to all campus facilities.

Registration, Advising & Class Schedule is a process which is part of the student' journey till graduation. Advising is important and better be consistent, being online, the same adviser should assist the student throughout the whole university years. Student should have the possibility to register online for his/her classes and monitor his/her accomplishments.

Class work & Learning resource access, as it is named online learning or e-learning imply various communications tools. Here e-presence is particularly important.

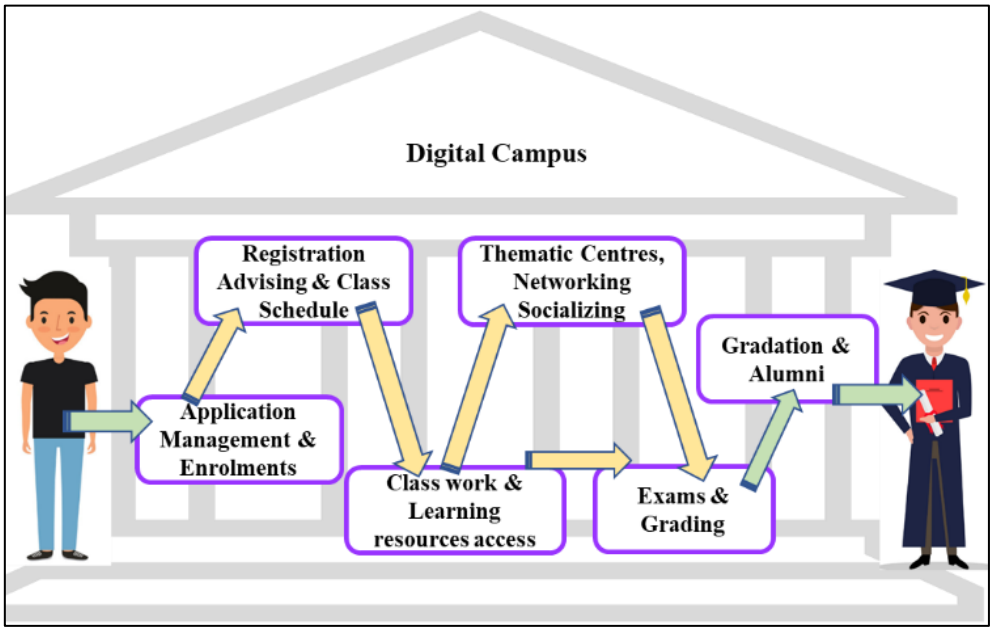

Figure 5: Student's journey within Digital Campus

The university campus, though its e-communication tools, is better to give free access to all facilities. To effectively manage a campus-wide digital signage application, the system is better to have a set of tools and widgets to connect to the established university applications to collaborate and exchange data in an automated and real-time fashion (Qu/Huo, 2012). The existence of e-Library for resources and free access to a database for research is compulsory to achieve a quality of teaching and learning, as research is part of learning. Students should be able to have access to library and database, in online mode, wherever they are, not only from physical campus.

Thematic Centres, Networking & Socializing. Being part of one or more Thematic Centres or Clubs is particularly important for networking or socializing (for example: Student Research Club, Business and Finance Club, Chess Club, Football Club, Sailing Club, so on so far). In a Digital campus, all networking and socializing activities/facilities should, as much as it can, be also offered online. Encouraging students to work together on different projects, will equip them with team management skills, decision-making ready, and will develop their innovation and creativity.

Exams & Gradings. During the last 6 months, in 2020, since social distancing restrictions were imposed because Covid-19 pandemic, all students, professors and academic administrators realized that course learning outcomes can be verified through several types of assessment, conducted online. Therefore, all academic participants are better to be trained to use designated e-communication tools, such as: MS Teams, Zoom, Skype for Business, Office 365, EOL and others. Exam schedule should be visible online, on professors and students' university page, and grading system should be online too. Students are encouraged to have the possibility to consult their grades online, after each assignment. An orientation related to all communication channels is better to be conducted at the beginning of each semester, or anytime is appropriate, regardless of whether the educational activity takes place in conditions of social crisis or in normal conditions, without any restrictions.

Graduation & Alumni. One of the most beautiful moments of a student's university journey, of which he/she is proud is Graduation. In this last stage as a student, all degree process, final transcript and certificate can be conducted online, even it is more lovely to have an in-campus ceremony. And the university implication in student's life is not stopping here. A dedicated area for Alumni is recommended to be in place, for placement possibilities, continuous learning developments, and research projects in partnership with private or public industry.

5. Conclusion and Recommendations

We are living in a time of changings, economic and social behaviors are moving with the speed of light, every day is challenge and an opportunity too, and digitalization become part of everything. Today, education is called to produce skilled students able to fit the new market needs. Therefore, investment in education appears more than necessary. Shifting from traditional learning to e-learning and equip the students with those qualifications and skills needed to be employable become a must not optional. In this respect, the present paper concluded that students have to become familiar using new technologies tools. And from this perspective, Digital Campus takes a step forward, being more than technology and going online.

Digital Campus is an entire journey to which students are exposed. Digital Campus is more complex than online teaching, is about willingness to change safety, investments, innovation, creativity, and teamwork. An investment in Digital campus approach, as a technological developed perspective of higher education is more than welcome, to help the entire economy to grow in a healthy and sustainable way.

Shifting from in campus teaching to online, and from Physical Campus to Digital Campus, especially during the Spring semester of academic year 2019/2020 really challenged and changed the students and the faculties perspective. Both students and faculties were exposed to online teaching and asked to use digital skills overnight. This was a real challenge, as we are talking about digital systems quite a while, changing and teaching remotely was becoming real in one night, all academic actors had to adapt

sooner that they wanted or thinking to. In a couple of weeks in majority of universities around the word started orientation session for students and faculties, new communication tools started to be utilized, and many discovered that all smart devices that we are using for different apps can also be used for university facilities. More than this, administrators of the universities started to give more attention for financial resources allocated to equip students and faculties with dedicated devices able to conduct online teaching. Therefore, in the last first month of 2020, we all realize that digitalization is part of our life and, if we didn't start to use it in the past, we have to use it now.

Digital campus is an academic education approach which provides anytime and anywhere access to both learning, research, meeting the industry, as well as administrative content (Moşteanu, 2020e). Access to a developed higher education system, such digital campus, it transforms the lives of people and society. The ability of universities to provide access to education in line with modifying behavior, changing needs and circumstances are priorities in the actual environment.

The Digital Campus is a high-tech experience, and nevertheless represents a pathway for universities to respond to 21st century society's changing needs and remain relevant, ensuring quality of teaching and learning, at the same time. Investors are always looking for their return. If the investor is the government, then the return is the increase in educational level for the whole society. If the investor is a private company, then the financial investment in education of 21st century deal with many faces: a) stimulate in house and outside digital technologies providers for educational system offered online, or face-to-face & online blended, delivered simultaneously; encourage private industry to participate in amending teaching and learning curricula in order to equip graduate students with digital skills required for actual labor market; and, encourage the potential investor to participate in developing digital campus, as a business of the future, in education industry, as education will always be needed, regardless the economic level of the corporate or government side.

Investment in education is investment in our future safeties, and economic development is fully supported by educational institutions. Digital communication facilities are developing people's professional field. Therefore, humans must be supporters of the development of future society and start integrating digitalization in their education plans.

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