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The impact of information technology development on the higher education

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Abstract

Advances in information technologies are transforming the whole social and economic scene and changing requirements not only for technology-related industries, but also education in all levels. The Covid-19 pandemic has highlighted awareness of the strategic role that digital technologies play in underpinning the long-term success and sustainability of higher education institutions (HEI) as well as their strengths and weaknesses. Aim of this paper is to analyse, how these changes have affected the higher education ecosystem, examine the current challenges and opportunities faced by HEIs on order to adapt to already available and upcoming technologies.

Keywords: digital transformation, higher education, Covid-19

1 Introduction

The importance of digital transformation and information technology in all areas related to human activity has been discussed for a long time. Technological developments have affected all sectors. Higher education is not an exception. The more pervasive digital becomes in the economy, and the more these disruptive technologies continue to drive change, the more integral they become to the success of HEI. [1] Various studies and reports on this issue are published, policy documents and legal acts are developed on the basis of their conclusions.

As a state of emergency was declared in many countries and strict restrictions were imposed, face-to-face services including education were limited. The recent transition to online learning has been as rapid as it has been impressive. But what has been achieved so far has mostly been about adding new tools to old pedagogy rather than general digitally enabled education across the board. The next big challenge is to integrate digital transformation into the core of university strategy. [2]

2 The impact of information technology on the higher education ecosystem

Studies and reports on higher education for several years have emphasized the need for educational institutions to take in account technological developments and to provide services according to the opportunities offered by information technology, offering remote, inclusive and online learning opportunities. [3]

As highlighted in various reports, the higher education landscape is at the crossroads of an amazing digital shift [4]. The next shift likely will be from mass face-to-face to mass digital learning where the dominant mode of delivery will be designed through technology - "digital first" – and supplemented by face to face, human support. [5]

It is important to use the experience gained during a pandemic, rather than waiting for the times when "everything will happen as in the past", because the digital transformation in education ecosystem helps to achieve several key objectives:

1. Socio economical (e.g. ensure inclusiveness, accessibility, reduce territorial and social barriers, discrimination);
2. Quality assurance (as a result of global competition each institution is forced to constantly upgrade and improve their programmes, ensure better quality)
3. Adaptiveness (the integration of digital transformation into the strategies of organizations, as well as its purposeful implementation provide a greater adaptability. To survive the current and future shocks, digital needs to be part of institution wide strategy rather than a bolt on or afterthought. [6]

3 The impact of the external environment on higher education

In order to achieve the above objectives, it is necessary to have a favourable environment for the implementation of digital transformation activities and to overcome the various obstacles that currently exist.

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The following factors are considered in this paper:

1. Legal-political. On the legal-political level the importance of digital environment and digital competencies has been well recognized. The EU has developed such a regulatory environment, a number of initiatives, platforms that facilitate the introduction of technologies and the development of digital competences in various fields, including education. A European approach to digital transformation means empowering and including every citizen, strengthening the potential of every business and meeting global challenges with Europes core values. [7] It is supported by The European Digital Strategy, Digital skills initiatives (e.g. The European Skills Agenda, The Digital Education Action Plan), investments aimed to tackle the digital skills gap (e.g. The Recovery and Resilience Facility, The Digital Europe Programme, Horizon Europe). [8]

2. Infrastructure. Despite the various factors facilitating digital delivery of higher education services, the Covid-19 pandemic has shown that goals cannot be achieved without an infrastructure for a high-quality connectivity.

3. Socio-economic situation. Another issue that should be addressed is the ability of each household to provide the necessary technological equipment.

4 The main factors contributing to the digital transformation of HEI in the internal environment

Higher education is not isolated from the external environment which is affecting its internal envoronment. The more pervasive digital transformation becomes in the economy, and the more these disruptive technologies continue to drive change, the more integral they become to the success of higher education institutions. It has become unthinkable that universities would be able to effectively manage most of their biggest challenges without the use of digital. [9]

Following challenges of an internal environmental

need to be addressed:

1. Strategy. Although the technologies available to the institution play an important role in the implementation of the digital transformation, a precondition for its successful implementation is the institution's strategy. Digital needs to be recognised as a strategic asset and as a way to help deliver the university's mission.

2. Business, operating model. Once the strategic goals have been defined, it is necessary to evaluate which organization, business model will be the most suitable for achieving these goals, since one or another model will be more appropriate for different strategic priorities.

3. Recources. The success of digital strategic initiatives will require the allocation of appropriate resources, financial as well as human. Investments in infrastructure will provide an opportunity to take advantage of modern technological opportunities, but the success of the digital components of a long-term strategy will largely come down to the willingness and ability of staff to implement it. The result will depend on the staffs capability, skills, incentives, and behaviours. Therefore addressing a lack of digital competence among staff is among the highest priorities in mitigating risks in the delivery of digital strategy. [10]

5 Conclusions

There is a clear need for greater digital awareness and fluency among all representatives of higher education ecosystem. Covid-19 pandemic have accelerated digital transformation in education at the same time highlighting the current shortcomings: 1) territorial, social and economical barriers, 2) outdated pedagogical approach – new tools applied to old approach. The current political-legal environment is favourable for the implementation of digital transformation, however, to provide a modern and adaptable services, each HEI must review its strategy, putting the digital shift in its center.

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