

Chapter 7

Emerging EdTechs Amidst the COVID–19 Pandemic: Cases in Higher Education Institutions

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ABSTRACT

The role of information technology (IT) transforming higher education (HE) institutions is flourishing. Students, lecturers, and faculty staff adopt overarching platforms and applications that are driven by ubiquitous technology such as big data and cloud computing to support their teaching and learning activities. In this chapter, the authors analysed cases of EdTechs (apps) used in the higher education institutions (HEIs) and their impact on teaching and learning processes. They draw the benefits, challenges, and appropriate cases pertaining to the apps used in HEIs in supporting such processes. They find that EdTechs have a high potential to provide better education for students, easier teaching process for lecturers, and clearer managerial process for administrators and faculty members. The chapter concludes that while EdTechs used during the pandemic can provide an alternative learning experience, it still lacks in providing optimal learning engagement.

INTRODUCTION

From early 2010s the research on how Information Technology (IT) transforms higher education (HE) institutions is flourishing. A rapid increase in online education across secondary and tertiary institutions all over the world is explained by the advent of the World Wide Web (www) (Allen and Seaman, 2017) and its penetration into conservative Higher Education Institutions (HEIs) (Stone, 2017; de Wit, 2018). In terms of adding apps into HEI learning processes, there are number of new technologies that could play a positive role. For instance, over the last years, Big Data has attracted the interest of academia. This technology provides higher education institutions to make more adjusted decision making on allocation

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of IT resources that is expected “*to improve the quality of educational services, guide students to provide student experience, deliver higher completion rates, and improve student persistence*”. HEIs are adopting cloud architectures and, new digital devices, entering digital platforms (Coursera), create ecosystems between students and lecturers. This often results in more data generation and new opportunities for Big Data-driven analytics to find patterns in the data, predictive maintenance, and prescriptive maintenance to play out several scenarios of future performance of the HEI (Ali, 2019a; Ali, 2019b; Ali, 2020).

Big data has provided new opportunities for more insight about student expectations, their intentions, and their challenges. This all contributes to better online learning process. Through new analytics, HEIs can improve “*understanding of their learners’ challenges and apply the resultant insight to emphatically enhance the improvement*” (Slade and Prinsloo, 2013). Rio Salado University, which enrolls over 41,000 students in both online and in-campus courses provides a good case of developing a new analytics software for tracking student performance, which could be used for more efficient decision-making. Such apps enable student-oriented learning environments, which helps non-traditional students to achieve high academic goals “*through personalised intermediations*” (Crush, 2019). In such settings, tutors get new insight into the individual progression of their students, and they are well informed to act if things are going in the wrong direction (Ali et al., 2019). Such, technology-based learning provides necessary data for new generation of apps which can illuminate what works and what does not work so that learning outcomes can be enhanced using informed mediation. In this case, the intuition and own perception of a lecturer gets supported with AI enabled systems, providing feedback. Mobile apps developed by HE institutions differ in two main types, including tools *for enhancing learning*, which solidify the content of lectures, self-test students’ knowledge of the subject, and allow collaboration with peers and *tools for organising studies*, which easy student transition into university life and assist with various aspects of university experience (Pechenkina, 2017). Such systems rely on data growth and require access to this data across other courses, departments (looking for similarities and average student profiles) and across university itself. Additional challenge is to integrate such distributed data, as it is typically non structured and distributed in thousands of desktops.

To this end, online learning demonstrates the comparability of the in contrast to face-to-face learning (Bernard *et al.*, 2004; Means *et al.*, 2009). The introduction of Massive Opened Online Courses (MOOCs) have changed the earlier perception that the university studies are always held in a formal classroom environment with a physical presence of a lecturer (Young, 2012). They have triggered universities to search for new measures how to attract potential students to more expensive offline format of studies, which included developing new mobile applications supporting online course content and communication of students and lecturers around them. Two main segments of research about online learning exist – the development of good designs and the assessment of students’ satisfaction with an online learning platform in comparison to the conventional/traditional face-to-face course (Saadé, He and Kira, 2007).

Students, lecturers, and faculty staff adopt the overarching platform for delivery of the given service, which is often hosted using cloud computing technology. Cloud computing allows access to infrastructure, software, hardware, and platform at any time in any place if there is internet access. Amongst the existent cloud service models, the software-as-a-service (SaaS) model is the most applied service model in HEIs. The studies show that students and tutors utilize also general purpose cloud apps, such as Google Docs/ Drive, Calendar, and Sites, and these can be effectively used for communication between academic staff and their students (Owayid and Uden, 2014). These apps have a significant impact on work performance in the higher educational settings, while the administrative staffs is more positive toward using Google Apps than the academics (Al-Emran and Malik, 2016). The early adoption of cloud computing in South

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