Evaluating service quality and performance of higher education institutions: A systematic review and a post COVID-19 outlook

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Purpose: This contribution presents a systematic review on service quality in higher education. It discusses about the latest opportunities and challenges facing higher educational institutions (HEIs) following the outbreak of the Coronavirus (COVID-19) pandemic.

Design / methodology: The research relied on the grounded theory's inductive reasoning to capture, analyze and synthesize the findings from academic and non-academic sources. The methodology involved a systematic review from Scopus-indexed journals, from intergovernmental and non-governmental policy documents as well as from university ranking sites and league tables.

Findings: The comprehensive review suggests that HEIs can use different performance indicators and metrics to evaluate their service quality in terms of their resources, student-centered education, high impact research and stakeholder engagement. Moreover, this paper sheds light about the impact of an unprecedented COVID-19 on higher education services.

Practical implications: During the first wave of COVID-19, the delivery of higher educational services migrated from traditional and blended learning approaches to fully virtual and remote course delivery. In the second wave, policy makers imposed a number of preventative measures, including social distancing and hygienic practices, among others, on HEIs.

Originality / value: This timely contribution has synthesized the findings on service quality and performance management in the higher education context. Furthermore, it investigated the effect of COVID-19 on higher education services. It implies that HEI leaders ought to embrace online teaching models and virtual systems, as they are here to stay in a post-COVID-19 era. In conclusion, it deliberates on the challenges and responses in the short/medium term and provides a discussion on the way forward.

Keywords: Service quality, higher education, higher education service quality, higher education performance, COVID-19, universities, education technology.

1. Introduction

Students are continuously evaluating the service quality of their higher education institution (HEI). They assess the HEIs in terms of their tuition fees; educational services that they offer; their physical aspects, including the technical and functional quality of their infrastructure; interactions with academic and administrative employees, as well as their corporate image and reputation, among other issues (Ozkan and Koseler, 2009; Clemes, Gan and Kao, 2008; Hill, 1995). Parasuraman, Zeithaml and Berry (1988) contended that consumers evaluate service providers in terms of their reliability or capability to deliver the service; ability to inspire confidence; empathy (i.e. sensibility towards the consumers' feelings); responsiveness (i.e. prompt positive reactions); and tangibles (i.e. the appearance of the physical facilities, personnel and communication materials). The consumers are continuously comparing their expectations with the service providers' actual performance (Cronin and Taylor, 1992), as service quality comprises both the process as well as the outcome of the service delivery (Clemes et al., 2008; Tan and Kek, 2004; Parasuraman et al., 1988). The evaluation of service quality is based upon the customer–employee interaction (i.e., the process aspect), the service environment, and the service outcomes (Quinn, Lemay, Larsen and Johnson, 2009; Snipes, Oswald, LaTour and Armenakis, 2005; Brady and Cronin, 2001).

In the higher educational context, there are a number of stakeholders, including the students, their employers as well as the government. These stakeholders are often considered as the consumers of universities and colleges (Raaper, 2019; Lomas, 2007). They demand high-quality educational service from HEIs in terms of the provision of education, high impact research and outreach that will ultimately benefit to their business, industry and society at large (QS Ranking, 2019; THE, 2019). EU (2017) pointed out that HEIs ought to focus on (i) improving the skills of their students, (ii) addressing the social dimensions, (iii) fostering innovation and regional engagement, and (iv) reviewing performance management systems to incentivize and reward good practice. Tertiary education service providers, including

universities and colleges have to address any skill gaps and mismatches in different labor markets (Camilleri and Camilleri, 2016). There are higher education students, who for different reasons, are leaving their educational institutions with poor skill sets and capabilities (HBR, 2019). HEIs are expected to deliver quality and inclusive higher education services to the most vulnerable individuals in society (EU, 2017). They can collaborate with other institutions on research and learning projects to address shared challenges relating to innovative, interdisciplinary ecosystems (EUA, 2019). This way, they will build their corporate image, reputation and branding.

Those HEIs that are not delivering appropriate service quality to their stakeholders will usually receive negative reviews and ratings. Over time, this may result in a devastating effect on their international rankings and league tables. HEI leaders ought to recognize the tangible and intangible attributes of their higher education services. Hence, there is scope for them to regularly evaluate their performance in terms of their resources, education, research and engagement.

1.1 Research question

This contribution presents a systematic review on the service quality of HEIs, including universities and colleges. It captures, analyzes and synthesizes the findings from high-impact theoretical underpinnings and empirical studies on 'higher education' and 'service quality'. It examines the relevant literature that is focused on the higher education students, on their learning experience, and on the delivery and performance of their service provider. Afterwards, it deliberates on the impact of COVID-19's preventative measures on the provision of higher education. It discusses on the challenges and responses in the short/medium term and on the way forward in a post COVID era. It elaborates on the implications to policy makers in education and outlines future research avenues to academia.

2. Data capture, analysis and reporting

This research relied on the grounded theory's inductive approach to capture and interpret the findings (Eisenhardt, Graebner and Sonenshein, 2016). This systematic methodology involved a methodical collection and syntheses of qualitative data from journal articles that were indexed in Scopus. "Higher education" and "service quality" were the typed keywords in the search criteria. The researcher delved through the articles' research question(s), methodology sections, findings and implications. The search has yielded 640 items. 515 of them were journal articles. There were 82 conference proceedings, 21 reviews and 15 book chapters that were focused on the search topic. The most common keywords included higher education (283), service quality (273), students (88), student satisfaction (75), quality of service (70). Table 1. features twenty of the most cited publications and the keywords that were used to describe their content (the keywords were identified by the researcher, where they were not included by the publisher).

Table 1. A non-exhaustive list of contributions on higher education and service quality

Authors	Year	keywords
Ozkan, S., Koseler, R.	2009	e-Learning information systems; Learning management systems; e-Learning evaluation; e-Learning evaluation survey; Statistical analysis; Students' satisfaction.
Hill, F.M.	1995	Service quality; expectations; perceived quality experience; perceived service performance; students' expectations.
Oldfield, B.M., Baron, S.	2000	Service quality; higher education; consumer attitudes.
O'Neill, M.A., Palmer, A.	2004	Performance management; education; quality.
Cheong Cheng, Y., Ming Tam, W.	1997	Higher education; quality assurance; quality management; schools; service quality.
Voss, R., Gruber, T., Szmigin, I.	2007	Service quality; higher education; means-end; laddering.
Ford, J.B., Joseph, M., Joseph, B.	1999	Customer satisfaction; higher education; performance management; service quality; services marketing.

Hemsley-Brown, J., Lowrie, A., Gruber, T., Fuß, S., Voss, R., Gläser-Zikuda, M.	2010	Customer services quality; students; higher education; Germany; customer satisfaction.
Abdullah, F.	2006	Service quality assurance; higher education; measuring instruments.
Abdullah, F.	2006	Service quality; measuring instrument; higher education, unidimensionality; Service quality; measuring instrument; higher education; unidimensionality.
Tsinidou, M., Gerogiannis, V., Fitsilis, P.	2010	Higher education; service quality assurance; Greece.
Owlia, M.S., Aspinwall, E.M.	1996	Factor analysis; higher education; quality.
Lagrosen, S., Seyyed-Hashemi, R., Leitner, M.	2004	Quality management; education; universities; service quality assurance.
Brochado, A.	2009	Service quality assurance; higher education; Portugal.
Ng, I.C.L., Forbes, J.	2009	University; service; value co-creation; marketing.
Tan, K.C., Kek, S.W.	2004	SERVQUAL; student satisfaction; student perceptions; student expectations.
Snipes, R.L., Oswald, S.L., LaTour, M., Armenakis, A.A.	2005	Employee job satisfaction: Employee empowerment: Customer satisfaction; Service quality; Job facet satisfaction; Services management.
Angell, R.J., Heffernan, T.W., Megicks, P.	2008	Customer services quality; service quality assurance; postgraduates; higher education; United Kingdom.
Clemes, M.D., Gan, C., Kao, T.-H.	2008	Higher Education; Hierarchal Model; Student Satisfaction; Service Quality; Service Quality Dimensions; Behavioral Intentions.
Quinn, A., Lemay, G., Larsen, P., Johnson, D.M.	2009	Service quality; higher education; quality techniques; quality measurement; continuous improvement.

(Note: Sorted by highest number of citations)

This research was grounded on relevant theoretical underpinnings and empirical studies (on higher education service quality). Moreover, it also involved a review of intergovernmental and non-governmental organizations' policy documents as well as from university ranking sites and league tables relating to performance management and COVID-19.

3. The service quality of HEIs

HEIs are expected to adapt to ongoing developments in their macro and micro-environments as they are usually operating with budget constraints (Camilleri, 2019). Therefore, they compete for funding and for student numbers in a global marketplace (OECD, 2019; Hägg and Schölin, 2018; Tian and Martin, 2014). Very often, they are using the corporate language as they formulate marketing plans, set objectives to control their resources, and are becoming customer-driven (Lynch, 2015; Sojkin, Bartkowiak and Skuza, 2012; Naidoo, Shankar and Veer, 2011; Ng and Forbes, 2009). The logic behind these managerial reforms is to improve the HEIs' service quality and performance (Rutter, Roper and Lettice, 2016; Mourad, Ennew and Kortam, 2011; Abdullah. 2006a).

The challenge for HEI leaders is to identify their students' and other stakeholders' expectations on service quality. The consumers' perceived service quality is defined as the degree and direction of discrepancy between their perceptions and expectations (Quinn et al., 2009; Parasuraman et al., 1988). Quality is distinguished from satisfaction, in that, the latter is assumed to involve specific transactions. As part of the conceptualization, expectations are viewed as desires or wants of consumers (Zeithaml, Berry and Parasuraman, 1993). Parasuraman et al. (1988) measured the individuals' perceptions and expectations about service quality. Their SERVQUAL scales assessed service quality in terms of tangibility, reliability, responsiveness, assurance and empathy services (Brochado, 2009; Tan and Kek, 2004). In a similar vein, other authors noted that service quality comprises three significant dimensions; service processes, interpersonal factors, and physical evidence (Tsinidou, Gerogiannis and Fitsilis, 2010; Angell, Heffernan and Megicks, 2008; Oldfield and Baron, 2000). Notwithstanding, the HEIs' physical evidence (that is associated with their tangible aspect) can also influence the students' satisfaction levels (Wilkins and Balakrishnan, 2013; Ford, Joseph and Joseph, 1999).

3.1 The students' learning experience

The students are considered as the primary customers of tertiary education institutions (Quinn et al., 2009; Lomas, 2007; Snipes et al., 2005). Their expectations on the HEIs' service performance plays a key role on their quality perceptions (Raaper, 2009; Brochado, 2009; Abdullah, 2006b; Hill, 1995). Students spend a considerable amount of time on campus, in lecture rooms, libraries, IT labs, canteens, sport grounds, et cetera (Hill, 1995). They will probably use the HEIs' service facilities, technologies and equipment. Ozkan and Kozeler (2009) maintained that the learners' perceived satisfaction with higher education technologies is dependent on the quality of the instructors, the quality of the systems, information (content) quality and supportive issues. Hence, HEI leaders have to ensure that the tangible aspects of their higher educational services ought to be in good working order for the benefit of their users.

3.2 The service delivery

The provision of higher education services involves "person-to-person" interactions (Clemes et al., 2008; Solomon et al., 1985). The frontline employees (like faculty employees) can influence the degree of their consumers' (or students') satisfaction and experiences (Raaper, 2019; Ng and Forbes, 2009; Ford et al., 1999; Bitner et al., 1990). Both academic and administrative employees' ability and willingness to deliver appropriate service quality will determine the students' overall satisfaction with their higher education services (Tsinidou et al., 2010). Oldfield and Baron (2000) contended that students rely on the non-academic employees, including administrators and support staff, over whom the course management teams have no direct control. They pointed out that the students may not be interested in the HEIs' organizational hierarchies, as they expect their employees to work in tandem. Therefore,

the administrative employees should also communicate and liaise with the academic members of staff, to ensure that the students receive an appropriate quality of service. The course instructors should be evaluated in terms of their technical and interpersonal skills, consistency of performance and appearance (Camilleri, 2021; Angell et al., 2008). The students want their lecturers to be knowledgeable, enthusiastic, approachable, and friendly (Voss, Gruber and Szmigin, 2007).

The HEI leaders should be aware that their employees' interactions with their students will have an effect on their satisfaction during their learning journey (Quinn et al., 2009). The members of staff represent their employer whenever they engage with students and other stakeholders (Voss et al., 2007). Therefore, HEI leaders ought to foster an organizational culture that represents the institutions' shared values, beliefs, assumptions, attitudes and norms of behavior that bind employees to deliver appropriate service quality and the desired performance outcomes (Kollenscher, Popper and Ronen, 2018; Pedro, Mendes and Lourenço, 2018; Trivellas and Dargenidou, 2009; O'Neill and Palmer, 2004).

4. Measuring the service performance of HEIs

The employees' performance is usually evaluated against their HEIs' priorities, commitments, and aims; by using relevant international benchmarks and targets (OECD, 2019; Brochado, 2009; Lo, 2009 O'Neill and Palmer, 2004). Generally, the academics are usually appraised on their research impact, teaching activities and outreach (Camilleri, 2021; QS Ranking, 2019; THE, 2019). Their academic services, including their teaching, administrative support as well as the research and development (R&D) duties, all serve as performance indicators that can contribute to build the reputation and standing of their employer (Geuna and Martin, 2003). The university leaders should keep a track record about the age and distribution of their faculty members; diversity of students and staff, in terms of gender, ethnicity, race, et

cetera. In addition, their faculties could examine discipline-specific rankings; and determine the expenditures per academic member of staff, among other responsibilities (Camilleri, 2019).

The quantitative metrics concerning the students' performance may include their enrolment ratios, graduate rates, student drop-out rates, the students' continuation of studies at the next academic level, and the employability index of graduates, among others (QS Ranking, 2019; THE, 2019). Moreover, qualitative indicators can also provide insightful data to HEIs on the students' opinions and perceptions about their learning environment. HEIs could evaluate the students' satisfaction with teaching; satisfaction with research opportunities and training; perceptions of international and public engagement opportunities; ease of taking courses across boundaries; and may also determine whether there are administrative and/or bureaucratic barriers for them (Kivisto, Pekkola and Lyytinen, 2017). HEIs should regularly analyze their service quality and performance through financial and non-financial indicators (Camilleri, 2021; Lagrosen, Seyyed-Hashemi and Leitner, 2004).

A relevant review of the literature suggests that the institutions ought to be evaluated on their organization; corporate governance, autonomy; accountability; system structures; resourcing and funding; consultation processes; digitalization; admission processes; student-centered education, internationalization; regional development; continuing education; lifelong learning qualifications; research, innovation and technology transfer; high impact publications, stakeholder engagement with business and industry; labour market relevance; collaborations with other HEIs and researcher centers; and quality assurance among other issues (OECD, 2019; EU, 2017; Lagrosen et al., 2004; O'Neill and Palmer, 2004; Cheng and Tam, 1997; Owlia and Aspinwall, 1996). The Organization for Economic Cooperation and Development (OECD) regularly reviews the current state of higher education systems in its member countries. Its benchmarking exercises are intended to scrutinize the performance of universities and colleges. OECD (2019) has used 24 domains to evaluate different aspects of the HEIs'

organizational performance. Table 2 features a list of 45 performance indicators that can assess the HEIs' resources and their key functions.

Table 2. OECD's HEIs' performance indicators

Resources	Expenditure on higher education, as a percentage of Gross Domestic Product (GDP)
	Total public expenditure on higher education, as a percentage of public expenditures
	Annual expenditure per student by higher education institutions
	Annual expenditure per student for all services
	Higher education expenditure on R&D, as a percentage of GDP
	Proportion of higher education institutions expenditure on R&D
	Household expenditure on higher education institutions per student
	Share of non-household private expenditure on higher education institutions
	Expenditure per student on grants and scholarships
	Share of academic staff younger than 35
	Share of academic staff 60 or older
	Share of women among academic staff
	Proportion of current expenditure spent on staff
	Ratio of academic staff to student in higher education institutions
	Non-academic staff per 100 academic staff
Education	First-time entry rates to bachelor's or equivalent programs, excluding international students
	Proportion of students in master's and doctoral programs
	Access rate gaps - parents without tertiary education
	Proportion of new entrants 25 or older, bachelor's programs
	Proportion of part-time students, bachelor's programs
	Proportion of international or foreign students, master's programs
	Proportion of new entrants who graduate on time or within three years from the expected time
	25-34 year-olds with higher education qualifications
	Percentage of graduates reaching at least literacy proficiency level 3, 16-34 year-olds
	Employment rates of master's graduates, 25-34 year-olds
	Employment premium for higher education graduates, 25-34 year-olds
	Percentage of graduates employed or in education, 15-29 year-olds
	Earnings of bachelor's graduates, relative to other workers, 25-34 year-olds
	Relative level of self-reported health for higher education graduates, 16-34 year-olds
	Relative level of self-reported interpersonal trust for higher education graduates, 16-34 year-olds
Research and engagement	Full-time equivalent researchers per 1 000 people, 25-64 year-olds
	Proportion of researchers working in higher education
	Proportion of women researchers in higher education
	Share of doctorate holders in the population
	Proportion of foreign citizen doctorate holders

	Share of higher education research and development that is funded by the business enterprise sector
	Higher education-business collaboration in research and development
	Share of small and medium sized enterprises collaborating on innovation with higher education or research institutions
	Share of PCT published applications by the higher education sector
	Proportion of Higher education R&D on basic research
	Number of publications per 1000 population, 25-64 year-olds
	Percentage of publications among the 10% most cited
	Share of research documents based on international scientific collaboration
	Difference between annual fractional inflows and outflows per 100 full-time researchers
	Share of scientific documents with open access

(adapted from OECD, 2019)

There are different methodologies and key performance indicators that can be used to evaluate the service quality in higher education. The above metrics are used to compare the OECD countries' HEI performance in terms of allocated resources, the provision of student-centered education, research and engagement. However, this scorecard and the quality of its outputs ought to be validated in different contexts. There are other performance variables, including the pedagogical knowledge and experience of the course instructors, the HEIs' working conditions, teaching methodologies and practices, the usage of education technologies, engagement with business and industry, et cetera, that were not featured in this scorecard. Perhaps, in reality it may prove difficult to measure qualitative issues. For instance, while HEIs may be willing to demonstrate their engagement with different stakeholders, currently, there are no mechanisms in place to monitor, report and assess their outreach activities.

The HEIs' responsibility is to address the skill gaps and mismatches in their labor market (OECD, 2019; EU, 2017). The governments' policy makers together with the HEI leaders need to address sector-specific skill shortages. Specifically, EU (2017) proposed that HEIs ought to: (i) better understand what skills are required by the prospective employers (ii) communicate to society, practitioners and policy-makers about what they are already doing to

prepare graduates for the labor market; (iii) prepare students and influence their choice of study; and (iv) implement effective learning programs that rely on blended learning methodologies including traditional and digital learning approaches.

5. The impact of COVID-19 on higher education services

5.1 Social Distancing

During the first wave of the pandemic, several universities and colleges have closed their doors to contain the spread of COVID-19 (Ren et al., 2020; Archila et al., 2020). They had to adapt to an unprecedented situation that disrupted their higher education services (Obaid AI-Youbi et al., 2020; Ana, 2020). The outbreak of COVID-19 has resulted in both challenges and opportunities for them. They had to take radical measures, including social distancing, to slow the contagion. The educational institutions, including HEIs have embraced the dynamics of the digital technologies to provide their educational services (Burns, 2020; Watermeyer et al., 2020; OECD, 2020; EUA, 2020). Most of them have articulated emergency plans as they disseminated information about the virus, trained their employees to work remotely, and organized virtual sessions with their students and/or other stakeholders (Hashim et al., 2020; Jowsey et al., 2020). In many cases, the preventative measures have led to the closure of the educational establishments (EUA, 2020). Hence, HEIs were expected to utilize education technologies (Longhurst et al., 2020; Romero-Rodriguez et al., 2020; Johnson et al., 2020).

5.2 Remote learning through virtual technologies

Several tertiary education institutions were in a position to migrate from traditional and blended learning approaches to fully virtual and remote course delivery to respond to COVID-19 (Worldbank, 2020; Jowsey et al., 2020). Very often, this contingent situation has resulted in different problems to teachers and their students (Obaid AI-Youbi et al., 2020; Longhurst et

al., 2020;). Both parties necessitated training, facilitation or orientation sessions to acquaint themselves with electronic learning (elearning) resources (Baloran, 2020). They also required appropriate internet connectivity (at their homes) to use their HEIs' learning management systems (LMS) like Moodle, Blackboard and Canvas, among others. Alternatively, they interacted with their students through virtual meetings, in real time (Budi et al., 2020; Arora and Srinivasan, 2020). The educators could have used Massive Open Online Courses (MOOCs) platforms like Coursera and EdX or video-conferencing platforms including Zoom, D2L, Webex, Adobe Connect, Skype for Business, Big Blue Button and EduMeet, among others (Worldbank, 2020). The market for these solutions is supported by cloud-providers such as Amazon Web Services, Microsoft, Google as well as national research education networks (NRENs).

Hence during COVID-19, most HEIs relied on LMSs for asynchronous learning through text, video lectures, et cetera. At times, they engaged in synchronous, interactive communications with their students (as they used video conferencing) to improve their students' learning experiences (Salman et al., 2020). COVID-19 has pushed HEIs to embrace elearning and mobile learning (m-learning). HEI leaders and their course instructors were expected to develop a new modus operandi to deliver their higher education services (Johnson et al., 2020; Rastogi and Priya, 2020). The course instructors were pressed (by their HEI leaders) to provide remote teaching to their students through virtual classroom services (EUA, 2020). As a result, instructors designed formative questions, tests, or exercises that were made available through the digital and mobile technologies. Very often, they engaged and interacted with their students in real time. However, the shift to online, synchronous classes did not come naturally. Technically speaking, it could have proved difficult for some educators to connect with a large number of students (or course participants) at the same time. In fact, many HEIs

relied on responsive helpdesks to support them in case of disruptions and/or to solve technical issues.

5.3 Possible challenges and responses in the short and medium term

Arguably, the educators in higher education and other levels, can never replace their traditional, face-to-face lectures and discussions with online teaching. However, the pandemic and its social distancing implications has resulted in school closures. Consequentially, the students' isolation could have had the potential to unsettle them (Araújo et al., 2020) or could have contributed to their lack in self-discipline (Bao, 2020). The educators' responsibility is to continuously monitor their students' emotional health (Zhai and Du, 2020) and psychosocial challenges (Longhurst et al., 2020). They can do so by organizing regular virtual interactions with them to address their sense of loneliness or helplessness, encourage them to share their experience, and discuss about coping strategies (Baloran, 2020).

In many cases, the educators could have defined the duration of live streaming sessions, according to their students' self-regulation and metacognitive abilities Their interactive lectures could have been supplemented with non-digital learning activities. HEIs had to ensure that their distance learning programs were accessed by all students, including those with disabilities or from low-income backgrounds (EU, 2017). UNESCO (2020) proposed that the governments can assist these vulnerable individuals by providing them with learning technologies (like laptops or tablets, if necessary) and support them with internet connectivity and other issues. Notwithstanding, HEIs were expected to protect the privacy and security of their instructors and students, as they had to upload educational resources through the Internet (Murphy, 2020; Sulisworo et al., 2020). The online resources, platforms and applications (apps) that are used for elearning purposes should not violate their users' data privacy (EUA, 2020).

5.4 The way forward in a post COVID-19 era

Those HEIs that have opened their doors to students and lecturers are encouraging them to wear masks, to keep social distancing, and to limit their gatherings in all public spaces, including outdoors. Their requirements may include daily screenings for symptoms before entering their campuses; strict hygienic measures like wearing a face mask in public spaces; maintaining two meters of distance from others; and the compliance with the signages in hallways, elevators, and stairwells (Chronicle, 2020).

At the time of writing this paper, everyone is expected to abide by their local health and safety policies. The students may be reminded about the nearest hand sanitizing station and to ease congestion at building entrances and exits (Archila et al., 2020). While most traditional-age students aren't at serious risk of developing complications if they contract the infection, many HEI employees are. As a result, several HEIs have updated their rules and regulations with COVID-19 procedures. In some cases, they have clarified the consequences for violations.

6. Conclusions

COVID-19 has had an impact on the delivery of service quality of HEIs. The pandemic has disrupted the education of millions of students in different contexts. However, on a positive note, it has opened a window of opportunity for higher education stakeholders. COVID-19 has triggered many educators to start using new teaching methodologies including synchronous, interactive communications to continue delivering their curricula and educational programs. Their sudden and unprecedented closure has led them to experiment with virtual education technologies and to engage with their students in real time, through video conferencing software. There were (and still are) a number of challenging issues and implications for the successful transition from traditional and blended learning approaches to fully virtual and

remote course delivery (some of these issues were duly pointed out in this contribution). COVID-19 urged HEI leaders to embrace virtual technologies to continue delivering student-centered education, to disseminate high impact research as well as for stakeholder engagement and outreach.

6.1 Recommendations and future research avenues

Arguably, the integration of education technologies in higher education will be accelerated in the foreseeable future. The use of interactive technologies shall become the norm, in a post COVID-19 era. Therefore, HEIs ought to invest in online learning infrastructures, resources and facilitating conditions, for the benefit of their students and faculty employees. This way, they will be in a position to improve their legitimacy with societal stakeholders, to attract prospective students, lure prolific faculty members and/or researchers, whilst raising the quality and standards of their higher education services.

Indeed, there is scope for further research that investigates the impact of remote teaching through digital and mobile learning technologies on the students' learning journey. Prospective research can use different methodologies, sampling frames and analytical techniques to shed more light about the implementation and effectiveness of remote learning. Future studies can explore the students' perceptions about the service quality and performance of higher education services that rely on distance learning approaches. They may also examine the effects of having fully virtual and remote course delivery on the students' experience and their learning outcomes.

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