

Were the higher educational institutions (HEIs) in Oman ready to face pedagogical challenges during COVID-19?

Pedagogical challenges of Omani HEIs

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Abstract

Purpose – When the repercussions of COVID-19 were being absorbed by the world, the higher educational institutions (HEIs) were conceiving of strategies to run educational institutions on remote basis too, including the challenges linked with the teaching–learning as well as the management and other departmental needs. Learning itself on the teaching–learning tectonic shifts amid the COVID-19 climes, the study reviews the status of “readiness” of the HEIs in Oman while bearing this in mind that the usage of information and communications technology (ICT) for distance learning and conventional learning has been considered as one of the parameters to judge the “quality” of the HEIs in Oman.

Design/methodology/approach – Documentary analysis alongside an in-depth reading of the quality audit reports sourced from the Oman Academic Accreditation Authority, which are publicly accessible are being referred for driving home the arguments in the study.

Findings – The study concludes that despite the case being in favor of distance learning from early on, the same doesn't get reflected in the conclusions derived in the research conducted for assessing the teaching–learning mechanisms during the COVID-19 period. Therefore, the HEIs' “readiness” in terms of ensuring the smooth transitioning to the remote learning pedagogical arrangements for meeting the challenges of the COVID-19 wasn't efficacious.

Research limitations/implications – The present study may be followed up with an understanding as to how the HEIs of Oman need to incorporate the perspectives of all the concerned stakeholders for the refurbishment of the teaching–learning process, especially in times of contingencies.

Practical implications – Apart from the policy-makers, the management of the HEIs of Oman needs to appreciate the need to be proactive and appreciative of the inclusion of ICT tools and techniques in the mainstream pedagogical settings.

Originality/value – Notwithstanding the emphasis upon the preparedness and readiness for tackling the challenges posed by the COVID-19 for the HEIs in Oman, no study has attempted to delve into the issue succinctly—the present study fills this gap.

Keywords COVID-19, Oman, Higher educational institutions, HEIs, Quality, ICT, Teaching–learning

Paper type Research paper



Introduction

COVID-19 grabbed the world with both hands and led to insurmountable shifts in the diverse socioeconomic sectors from 2019 onward. One such ramification pertained to its impact on the higher education sector wherein the higher educational institutions (HEIs) were faced with the challenges of tackling the pressures from students, parents, colleagues, management and the other stakeholders (Ndibalema, 2022). Such challenges related to the ways in which the “usual” norms of teaching–learning had to be discarded for the “new” ones where the physical presence of the teacher–student dyad was conspicuously missing. However, it remains to be bear in mind that with the quantum leaps made in the realm of information and communications technology (ICT), teaching–learning process during the COVID-19 period should not have been so daunting as is being documented in the extant research. COVID-19 made its onset in Oman in 2020 and had serious repercussions across all the socioeconomic sectors (Al-Ghafri *et al.*, 2020). Maintenance of quality standards in the Omani HEIs has always been an area of concern (Al-Lamki, 2022) much like in other countries (Larrechea & Chiancone, 2022). In Oman, the usage of ICT for the improvisation of teaching–learning process in the HEIs has been earmarked as the mandatory prerequisite for the maintenance of quality standards in the HEIs. Therefore, it is anticipated that the HEIs should not have encountered much difficulties in witnessing the sudden and sporadic shift from “offline” to “online” modes of learning and assessment. Retaining the select public and private HEIs in Oman as the context, the study seeks to put things in perspective by looking at the existing norms of ICT infusion in the teaching–learning process in the HEIs to assess the extent to which the HEIs were ready and equipped to face the contingency during and in the aftermath of COVID-19. Oman Academic Accreditation Authority’s (OAAA) Program Accreditation Manual (2016) mentions clearly that students should have access to ICT services and facilities “which are adequate to support the delivery of the program” given that ICT-enabled learning helps in achieving the “program learning outcomes” and “this includes support in the development of student digital literacy, so that students can work effectively online and in a virtual learning environment.” Thus, whereas the quality parameters identified by the OAAA Quality Audit Reports clearly stipulate that ICT infusion is a sine qua non for assessing the quality of the HEI, the same does not get reflected in the implementation of the same or in the extant research focused on the teaching–learning feasibility during the COVID-19 phase in Oman. With the overarching research question, “Were the HEIs of Oman ready to face the challenges posed by the COVID-19?”, the present study is a significant contribution in the understanding of the nuances involved in the management of HEIs in a developing country (Khan & Bhatti, 2016). Besides having a firsthand experience with the Omani HEIs, the selection of this research question is in line with the overall purport of the HEI-focused research with the emphasis upon being resilient in tackling the contingencies posed by the internal as well as external forces (Bihu, 2022; Park, Son, & Corey, 2023; Shaya, Abukhait, Madani, & Khattak, 2022). The present study is a contribution to the extant literature to the quality maintenance and quality assurance in the developing countries’ HEIs (Costa, 2022; Komotar, 2020). The rest of the paper is structured as follows: following a brief about the theoretical framework for setting the agenda of the study, the research methodology is detailed and discussion and analysis of the findings are being outlined. Conclusion and academic and practitioner implications constitute the tail end of the study.

Theoretical framework and review of literature

As far as the conceptual frameworks for understanding regarding the quality parameters of HEIs is concerned, different lenses have been invoked. For instance, a balanced scorecard approach has been used with the involvement of the relevant stakeholders in line with the overarching objectives and goals of the HEIs (Kettunen, 2008). In another comprehensive

performance assessment metrics, nine criteria were identified across three broad parameters of evaluation criteria, namely, internal referencing, external referencing and aspirational referencing (Chinta *et al.*, 2016). In a typical case of the application of the learning organizations' five metrics, namely, personal mastery, mental models, building shared vision, team learning and systems thinking, the overall assessment of the HEIs systemic model may be better understood (Bui & Baruch, 2010). Similarly, the applications of total quality management frames in HEIs (Prakash, 2018) via the lean Six Sigma approach have been instrumental in furthering the HEI's readiness and strategic execution of plans alongside the involvement of the relevant stakeholders (Sunder & Antony, 2018). In yet another conceptual framework, it has been proposed that with respect to the implications of the information systems in HEIs context, it is important that aspects such as digital transformation, enterprise architecture and digital leadership be closely aligned to facilitate HEIs' efficacious strategizing and execution (Tungpantong, Nilsook, & Wannapiroon, 2021). Furthermore, the overall "good" governance framework proposed for the HEIs underlines the implications of seven principles, namely, performance, transparency, accountability, participation, leadership, consensus orientation and fairness (Khanna, 2017).

Emphasis upon quality monitoring in higher education has been extensively covered in literature. For instance, monitoring-cum-management of quality in higher education is being discussed to ensure more accountability in higher education management (Cullen, Joyce, Hassall, & Broadbent, 2003; Sunder, 2016). Likewise, quality assessment has been considered as important for development of higher education (Nenadál, 2015). Quality monitoring in higher education should be adapted to institutional context so that higher education is better equipped in responding to national needs (Yorke, 1999). There are three perspectives regarding monitoring of education: education monitoring may be considered as an instrument of education management (Sallis, 2002); education monitoring has been conceived as an instrument of education qualimetry (Avanesov, 1987) and education monitoring has been explored in terms of assessment of the effectiveness of education quality management. Quality monitoring is defined as the broad set of quality-related activities or evaluations that occur either external or internal to an organization (Horsburgh, 1999). Quality monitoring in higher education has been discussed, *inter alia*, in terms of approval of individual degree and related qualifications to be offered outside a university, approval of individual programs and/or external examination of students by some professional bodies prior to admittance of graduates to a profession, academic audit within the university sector for improving quality according to their own academic requirements, monitoring of performance agreements by funding agencies, moderation of student assessment processes and tasks in respect of national qualifications, use of external examiners in degree and related programs in universities and in nonuniversity degree programs and use of external moderators and monitors in degree and related qualifications outside the universities (Horsburgh, 1997). One of the elements of quality monitoring is related to institutional self-evaluation (van Vught & Westerheijden, 1994), since such a self-evaluation is a responsibility of all the relevant stakeholders in higher education.

In line with the aforesaid, the present study seeks to understand the HEIs' readiness for addressing the challenges posed by the pandemic, especially given the impetus of quality standards in the higher education ecosystem.

Methodology

A constructivist paradigm (Guba, 1979) has been invoked in the present study which deals with deriving meanings from social constructions. Such social constructions developed in the course of interactions among the individuals and their responses and reactions regarding the interactions, situations, events and the other phenomena. For driving home the key arguments advanced in this study, the disciplined process was used in conducting documents' analysis

(Webster & Watson, 2002) wherein the extant Quality Audit Reports of the OAAA were ferreted out from the web portal itself and an in-depth reading was done to deduce the inferences. Quality Audit Reports in Omani HEIs were selected for the present study's research frame much like the evidentiary support used in extant research for assessing quality of HEIs in other contexts (Kooli, 2019; Kooli, Jamrah, & Al-Abri, 2019; Shah, 2012; Woodhouse, 2003). Conceding that the reports are publicly available and official, there is no question of "identity" recognition or questionable reliability. The subsequent sections elaborate upon the key insights from the OAAA's observations pertaining to the nature and scope of the infusion of ICT tools and techniques in the teaching-learning process across the HEIs in Oman. The Quality Audit Reports cover both the private and the public HEIs in Oman. Regarding the sampling procedures, a mix of purposive and judgmental sampling frames was used for finalizing the public and private HEIs as long as the reports were comprehensive, recently published ones from 2018 onward and covering the quality metrics pertaining to the overarching aims of the present study. Furthermore, the detailed reports were referred with specific reference to the teaching-learning and ICT infrastructure while discounting the aspects related with the historical background and the staff details. The task of assessing the Quality Audit Reports was undertaken by two of the lead researchers.

Quality audit reports of the private and public HEIs of Oman

This section covers the OAAA Quality Audit Reports of the select private HEIs first followed by those of the public HEIs. In the context of the Sohar University (OAAA, 2020), the "Strategic Plan" mentions that the university shall have an "integrated campus and digitalized learning environment." There is a dedicated IT Services Department in the university. E-learning has been included in the curriculum and online learning platforms are available to impart teaching in Arabic and English. Learning Management System (LMS) supported by Moodle is in place. Further, the OAAA Audit Panel reports that the students are satisfied with the ICT services.

The OAAA Quality Report of Muscat College (OAAA, 2020) mentions that the College has satisfactory ICT services although there might be a need to increase the staff for manning the same. Muscat College has a dedicated Information Technology Services department to look after the ICT needs of the college. It has Wi-Fi-enabled classrooms and the use of ICT is encouraged in the teaching-learning process. There is online system of self-learning as well that is provided via the LMS, that is Moodle. Even the students are satisfied with the ICT services of the college.

OAAA Quality Audit Panel complimented the Sur University College for the fact that "as a response to the pandemic (the college) transitioned to online teaching using . . . Virtual Teaching Environment platform" (OAAA, 2022, p. 20) and the students were satisfied with the teaching-learning formats. In any case, there are a Learning Resources Committee and the Information Technology and Network Centre that look after the provision of the optimum learning experience especially to "augment (the) blended learning processes" (OAAA, 2022, p. 28). Moodle is in place even "before the onset of the pandemic and hence the transition to online teaching in March 2020 was smooth" (OAAA, 2022, p. 28). However, the OAAA Quality Audit Panel advised that the College should introspect its online teaching-learning platforms and conceive of improvising the same.

OAAA Quality Audit Report for Bayan College (2022) mentions that there is a budget for maintaining the resources and IT equipment of the College and the Wi-Fi is in place. Apart from this, the college subscribes to CANVAS LMS and "a virtual helpdesk has been set up to meet the needs of students during the pandemic" (p. 24). The OAAA Quality Audit Panel reported that the students were satisfied with the ICT services and "no classes were cancelled or interrupted during the pandemic period due to the availability of the CANVAS LMS."

The university offering distance education from a long time, the Arab Open University, offers teaching–learning facilities via usage of ICT but the “students have expressed dissatisfaction with some areas of the IT provision,” especially with regard to the LMS which was slow or the inept Wi-Fi or even the poor quality of the videos that were run during the online learning (OAAA, 2022, p. 6).

OAAA conducted its Quality Audit in the International Maritime College before the pandemic, and the report (OAAA, 2018) underlines that there is a dedicated IT department that caters to the needs of students and the other staff and there is a Wi-Fi access for all. Students use Moodle as their LMS platform but “currently, it is not actively used by teachers or students” (p. 27), which implies that the college was not ready for facing the pandemic challenges as well.

OAAA Quality Audit Report of Gulf College (2019) shows that there is an absence of “any detailed planning for learning technologies provision” (p. 37). While there is a Moodle LMS, “the system is currently used solely as a passive repository of teaching materials” (p. 37). Besides, students are also concerned about the irregularity of software updates, network speed, internet service and Wi-Fi.

OAAA Quality Audit Report for the Majan College (2020) shows that online learning platform known as MOVE is in place and the quality and effectiveness of internet services is adequate. However, “some dissatisfaction was voiced with the slow wi-fi connection at the hostels” (p. 33).

Modern College of Business and Science (MCBS) supports the use of technology in teaching–learning activities, and the same is reflected in its computer-assisted learning or the student information and management system (EduPortal) and the LMS (EduOasis and BlueQuill) (OAAA, 2020). However, the Audit experts noted that the wi-fi speed was poor (p. 26).

At the A’Sharqiyah University (OAAA, 2019), the OAAA Quality Audit Panel experts concluded that the university supported digitalization and the use of technology (pp. 6, 23). The Audit Report also mentions that the students are satisfied with the technical support services in cases of bottlenecks. However, the students perceived that they had concerns regarding the poor Wi-Fi services.

Middle East College (MEC) is another private HEI and the OAAA Quality Audit Panel Report suggests that the college is tapping the ICT services adequately for teaching–learning platforms and another positive feature of the college is that its hi-speed internet connectivity is owing to the linkage with the Oman Research and Education Network (OMREN) (OAAA, 2021). Besides, there is an IT Services Office to train the students in the harnessing of IT resources (p. 26).

The key public university, Sultan Qaboos University, Muscat, has been promoting e-learning for a long time and the Moodle LMS is in place, but the teachers’ experiences with the online teaching formats need to be improved (OAAA, 2019). Another public HEI, the College of Banking and Financial Studies (CBFS), has been found to have an established IT Department to look into the management of the information and learning technology services, but there is a need for ensuring better internet connectivity given the fact that the students demanded better internet connectivity (OAAA, 2019). In the Quality Audit of Al Zahra College of Women (OAAA, 2020), the college has a dedicated Technical Support Department for taking charge of the information and learning technology systems, and the students were also informed about the learning facilities and technologies. There was always available the required technical support for redressal of grievances, if any. The Moodle—a learning management system—was also in place for serving as a virtual learning platform for the students. Online examinations were being held for some subjects already like English, mathematics and information communication. However, it was found that information technology infrastructure was “not verified” and the required “learning support” was not

available. For instance, the Wi-Fi services were not properly functioning despite the college's affirmation and this adversely impacted the student learning experience and satisfaction who rated the Wi-Fi service as "very poor." It was also deduced by the OAAA Panel experts that the laboratories and classrooms were not equipped with the latest available technology. Computer-assisted teaching and learning were infused in the curriculum to deliver the lecture in an "efficient and communicative way." However, the OAAA Audit Panel found that the e-learning pedagogies were not robust. Finally, the OAAA Audit Panel concluded that whereas the college did affirm its "strategic focus" on ICT-enabled learning, it was important there should be a "robust implementation planning and monitoring" of the same.

Results

Four-fold delineation of the findings may be attempted here, namely, vision, funding and investment, training and development and contextual factors. A major interpretation of the Quality Audit Reports may be underlined in terms of the improper arrangements in place for tackling uncertain situations. This implies that the HEIs in Oman did not have the vision and forethought to organize themselves to meet the contingency situations. HEIs in Oman have ample funds and this has been attested by the reports as well. However, the lack of optimal strategies at the senior management level led to the impediments in meeting the challenges posed by the pandemic.

The second aspect relates to funding of the Omani HEIs with respect to the refurbishment of their infrastructure and other resource-related facets, case in point being the human and material resources to meet the challenges of COVID-19 or any other contingency, for that matter. It is significant to note that maintaining a standard of high quality demands substantial investment in time and money, and this requires a concerted cooperation of major stakeholders (Lim, 2008). Despite being funded well and a multipronged policy for the HEIs in the public and private categories, it is surprising that the funds were not allocated for the refurbishment of the ICT edifices to enable unobstructed teaching-learning process during contingencies. COVID-19 was one such contingency wherein the HEIs should have been already geared up for tackling the issues that merited immediate attention. Teaching-learning process could have run smoothly without being hampered during the COVID-19 time. However, this did not happen and the readiness of the HEIs in Oman was found to be lacking in terms of the wherewithal and necessary paraphernalia. For instance, the improper functioning of the Wi-Fi or the online learning platforms underscores the failure on the part of the management to allocate the funds appropriately.

Third, the training and development needs of the teaching, executive and operational staff need to be taken care of in the Omani HEIs. For instance, the reports show that the ICT-enabled learning did not show that the teachers or the taught were adequately trained because of the challenges posed by COVID-19. Thus, it has been attested that the "offline" modes of learning are fraught with a number of challenges including low internet speed, difficulty in appearing for assessments and exams, challenges encountered vis-a-vis time management and personal problems. Had the teachers and the taught been familiar with the ICT-enabled learning for long, the times of COVID-19 could have been easily tackled. Implicitly, such impediments adversely impacted the teaching-learning processes as well, thereby leading to the overall failure of the management to check the challenges posed by the pandemic, case in point being the teaching delivery and assessment mechanisms.

Finally, contextual factors led to major impediments in the refurbishment of the Omani HEIs such that the interaction of the HEIs-specific elements with the environmental elements was not a good match. Thus, the reports show that given the poor internet connectivity, HEIs in Oman were not able to gear up for meeting the needs of the students during the virtual learning processes ushered in those times. Given that some of the HEIs are located in the

hinterlands or outskirts of Oman, the Wi-Fi connectivity is poor and the same requires a macroperspective to be shaped, namely, refurbishment of the ICT infrastructure across the country.

Discussion

The Sultan Qaboos University “*activated* the emergency e-learning plan (to) ensure that all courses and instructional materials are redesigned to fit with the requirements of online environments” (emphasis ours; Osman, 2020, p. 468). Likewise, Kukreti and Mishra (2021) concluded that “the HEIs in Oman *shifted* to the online and e-learning mode of teaching and learning” when the Covid-19 pandemic struck the country (emphasis ours, p. 27). However, this is surprising given the OAAA’s Audit reports that point out that online and e-learning modes of teaching-learning formats were already in place much earlier before the pandemic. In the context of MCBS, Oman, primary research conducted to ascertain the challenges of e-learning during the COVID-19 period showed that there were challenges pertaining to technical issues, online illiteracy, self-motivation, social status, problems in assignment and examination submissions, attendance and participation (Magd, Al-Busaidi, & Nzomkunda, 2021). In another case, it was found that the Middle East College, Oman, tried to introduce ERP model for curriculum transformation besides improvising e-learning platforms but the challenges pertained with respect to the same given the diversity of students in terms of their backgrounds wherein some hailed from rural areas with limited internet connectivity (Mohammed, Khidhir, Nazeer, & Vijayan, 2020). In another empirical investigation conducted with private HEIs of Oman, it was deduced that despite the provision of online live lectures, recorded lectures or presentations, students were not satisfied or unsure of the efficacy of the online pedagogical methods (Abushammala, Qazi, & Manchiryal, 2021).

Likewise, in another empirical research involving 11181 students of the Omani HEIs, it was found that students encountered challenges related with inadequate internet connectivity, poor audio–video quality and the inability to engage in interactive discussions with the teacher (Al-Maskari, Al-Riyami, & Kunjumammed, 2021). The same study also pointed out to the perception of the students that the new examination pattern led to an increase in the workload of the students. Similarly, in another empirical investigation involving the students from the International Maritime College and Majan College, Oman, it was found that students encountered challenges pertaining to network issues as also other issues linked with inadequate video and audio communication platforms and the lack of time management (Slimi, 2020)—this is in line with the OAAA Quality Audit report findings as well as highlighted in the preceding section. Another empirical research involving students from the public and private HEIs of Oman showed that the students from the public HEIs were more satisfied with the online learning platforms than from the private HEIs, and in general, the students perceived poor internet connectivity, weak technical support, absence of measures to check the plagiarism of answers and cheating, lack of prior experience, improper focus and time management, etc. (Abdulsattar, Al-Kubaisi, Al-Saifi, & Al-Shidi, 2022). Also, the study pointed out that the teachers were not well-versed with the online learning platforms. Likewise, in another instance, it was found that the students were merely “passive” learners in the teaching–learning process in their online classroom settings during the COVID-19 period (Syahrin & Salih, 2020). Furthermore, it was pointed out that despite the fact the transition to online teaching–learning environments was easy given the prior emphasis upon virtual classrooms, Omani students were “slightly uncomfortable” with the “new learning situation” and that they were required “to exert more energy towards their programmes and instructors” (Cifuentes-Faura, Obor, To, & Al-Naabi, 2021, p. 9). This result is surprising again given that when the students were already baptized in the rituals of virtual learning then why were they experiencing hiccups in the pandemic period when online

education became a norm. Contrastingly, in another empirical investigation conducted with the students of A'Sharqiyah University, it was found that students did not perceive difficulty in the online teaching–learning formats during the pandemic (Al-Ajmi, Al-Sharafi, & Yassin, 2021). Regardless, the overall conclusion is that the online teaching–learning platforms need to be upgraded in terms of quality maintenance.

Similar to the inferences in the present study, it was seen in the case of other developing countries in terms of the lack of requisite information and communication technology infrastructure and lack of training on the part of the teaching and staff as well as the students (Roy *et al.*, 2023). In Nepalese context, it was evident that the university students faced anxiety on account of technological complexities (Gautam & Gautam, 2021). Teaching presence was considered as an important determinant of student satisfaction with online teaching in the case of Egyptian universities (El-Sayad, Saad, & Thurasamy, 2021). Comparing the findings of the study from a developing country's perspective, it may be underlined that the developed counterparts were better equipped with the tackling of challenges in terms of provisioning digitally enabled education (Zarei & Mohammadi, 2022). Likewise, in the case of Australia, the university graduates perceived ease and comfort in online classroom settings as they were acclimatized with such settings even before the COVID-19 (Venkatesh *et al.*, 2020). The US universities were well-equipped with the resources for addressing the needs of the students as far as online provisioning of services was concerned (Whitfield, Bergmark, Dawson, Doganiero, & Hilgar, 2020). Similar results were evidenced in the Finnish case, where the students were satisfied with the online classroom delivery and content (Nikou & Maslov, 2023).

Conclusion

HEIs in Oman are vying to secure top-notch university scores in terms of the quality standards against the international indices (Saxena, 2016). COVID-19 brought about drastic changes in the teaching–learning formats in Oman (Tawafak *et al.*, 2021). The present study brought to the fore the challenges encountered by the HEIs in Oman with respect to juxtaposing ICT tools and techniques in higher education during the COVID-19 period that were identified in the extant literature with the background of the OAAA Quality Audit Reports that stipulated that the ICT infrastructure needs to be strengthened in the Omani HEIs for ensuring a wholesome teaching–learning experience. Even the latest OAAA stipulations have endorsed the same requirements—case in point being the [Oman Qualifications Framework \(2022\)](#) document wherein it has been envisaged that the student should be able to “demonstrate the ability to use a broad range of information communication technology in . . . study contexts” (p. 20) besides using “advanced information communication technology in a variety of different topics and issues” (p. 29). Overall, four classes of analyses were attempted in the study, namely, vision, funding, internet connectivity and accessibility and challenges. It is anticipated that there might be finer differences across the HEIs' readiness and students' adaptability conceding the rural and urban divide in the country wherein the students' accessibility of internet might differ in rural and urban areas.

It has been underscored in extant literature that HEIs need to have the requisite strategic direction and mission to chalk out a policy for sustaining its ICT edifice and for this; a budgetary allocation should be made accordingly to ensure the sustainability of the HEI (Al Dhaen, 2021; Farid, Ahmad, Alam, Akbar, & Chang, 2018). Given the investment of the country in digital learning formats (Bensaid & Brahimi, 2021), the need to meet contingency situations—COVID-19, in the present instance—becomes pertinent for ensuring that the overarching quality standards are not compromised. Omani HEIs faced many difficulties in meeting the requirements of online learning platforms in terms of the infrastructure and the adaptation to the new software(s); however, they are still in a preferred place than the other

Gulf Cooperation Council (GCC) counterparts (Al-Badi & Khan, 2022). Another conclusion to be drawn from the OAAA Quality Audit Reports is that both the private and the public HEIs need to focus on the infusion of state-of-the-art ICT infrastructures in the teaching–learning platforms such as Moodle or online platforms and to ensure that this is accomplished, resources should be mobilized accordingly.

Study limitations and implications for academics and practitioners

The study's limitations may be counted in terms of the methodological standpoint wherein distinct inclusion–exclusion criteria were set with an in-depth reading of the OAAA Reports. The present study could be rounded off with an empirical investigation into the manner in which the HEIs in Oman are able to reap fruits from the ICT-backed infrastructures. Therefore, stakeholders might be included as the prospective respondents to express their opinion regarding the opportunities and challenges regarding the efficacy of the ICT-backed infrastructures. A second limitation of the study pertains to the single case study, i.e. Oman, referred to in this present study. A comparative study might be undertaken to appreciate the different or similar trajectories of ICT-backed teaching–learning processes in the West and the developing countries of the Middle East. Also, further research is warranted across the HEIs of the GCC region such that the impetus upon the economic diversification and internationalization of education may be assessed in terms of the quality metrics. Finally, it is worthwhile to conduct a study regarding the manner in which the quality standards of the HEIs meet the international standards regarding the infusion of ICT in HEI.

As a contribution toward understanding the HEI's inclination toward the impetus on digital infrastructure much like in any developing country (Adekoya, 2022), the present study leaves significant practitioner insights. Given that only a few HEIs could be studied in view of the limited OAAA Quality Audit Reports, it is anticipated that the OAAA would conduct more quality audits regarding the efficacy of the ICT-enabled teaching–learning platforms. Quality parameters regarding the teaching–learning platforms need to be detailed and fine-tuned further to ensure that the HEIs are able to infuse the desired quality standards in their system. It is important that the HEIs vision be aligned across the broader aims of attaining the qualitative parameters relevant for the refurbishment of the HEIs apart from their efficacy in interacting with the environmental forces. It is also possible to develop a standardized policy document regarding the maintenance of quality standards that serve as a benchmark for the public and private HEIs. Finally, the study shows that improvised learning resources and material should be provided to the students for efficaciously imparting education to the students amidst pandemic or other contingencies (Mahmood, 2021).

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