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Faculty perception of online education: considerations for the post-pandemic world

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In the post-COVID era, academic institutions adapted curricula, utilizing aspects of the online delivery in full or partially. Consequently, this research focuses on identifying the factors that influence faculty perceptions of effective online delivery in higher education and comparing them with students' perceptions. The study involves semi-structured interviews with 15 faculty members at a renowned university to gain insights into their online teaching experiences during the pandemic. Additionally, 51 faculty members participated in a survey using the Relative Importance Index (RII) method to determine the most significant practices impacting online delivery. The results indicate that the most concerning factor for faculty during online delivery is facilitating students' engagement and interactions in class, with an RII of 0.94. Controlling academic dishonesty during assessments receives a relatively lower concern with an RII of 0.67. Making lectures interactive is identified as the most challenging practice for faculty. Comparing the findings with students' perceptions based on previous studies, both groups emphasize the significance of effective communication, interaction, and the use of technology. Faculty prioritize the delivery and organization of lectures, while students focus on engagement and interactive elements. Faculty value organization and relevance in assignments, while students emphasize instructor qualities and responsiveness.

KEYWORDS

COVID-19, online teaching, faculty perception, higher education, challenges, comparative analysis

1 Introduction

The COVID-19 pandemic has caused an unparalleled upheaval in the education system, surpassing any challenges previously encountered by educational institutions. This claim is substantiated by multiple studies conducted on the subject matter. As per the United Nations, over 1.6 billion students across more than 190 nations have been significantly affected by the long-lasting repercussions of the global crisis (De Giusti, 2020). Camille (2020) further emphasizes that the crisis not only exacerbated pre-existing issues in the education sector but also created significant barriers for vulnerable groups, particularly those residing in impoverished or rural areas. These marginalized learners faced numerous obstacles in pursuing their education due to the sudden shift to online learning, which resulted from the closure of physical educational institutions.

The swift transition to emergency online education in higher education posed significant challenges, as revealed by a comprehensive survey conducted by the International Association of Universities (IAU) (Marinoni et al., 2020). The findings highlighted the urgent need for robust student support systems, as students faced difficulties adapting to the online learning environment due to limited resources, inadequate technology infrastructure, and the lack of face-to-face interaction. Faculty and staff also encountered unprecedented challenges, including job insecurity and the need to reevaluate and restructure campus operations. Technical obstacles such as internet connectivity and effective pedagogy for distance learning further added to the complexities. The pandemic's impact extended beyond teaching and learning as research activities were severely hindered due to the cancelation of international events and limited collaboration opportunities, impacting the advancement of scientific knowledge. Although these consequences may have been relatively short-lived, their implications are expected to resonate throughout the academic landscape for years to come.

Numerous studies have emerged aiming to comprehend the profound impact of the COVID-19 pandemic on higher education and explore strategies to mitigate such effects in future pandemics. Similarly, several studies aimed to identify the challenges faced by higher education institutions (HEI) and systems in various countries, presenting preliminary solutions such as a rapid shift to online delivery to mitigate the pandemic's impact. These studies delve into various aspects of the crisis, shedding light on its consequences and proposing potential remedies. Azorín (2020), for instance, conducted a study focused on the detrimental effects of the pandemic on the Spanish education system. The findings exposed concerning rates of socioeconomic segregation, increased school dropouts, academic failures, limited opportunities for networking and collaboration, overcrowded classrooms with imbalanced teacher-student ratios, inadequate digital competences among teachers, outdated curricula, and constant policy changes. The study underscored the urgent need to address these issues and implement measures to prevent their recurrence in similar scenarios. Karalis and Raikou (2020) explored the technical obstacles arising from communication and cooperation gaps, as well as the broader limitations on social contact within the academic context. Their study emphasized the significance of enhancing communication channels and collaboration tools to maintain an effective learning environment. In contrast, Rashid and Yadav (2020) highlighted the pandemic's revelation of educators' limited competence in utilizing technology for educational purposes. Their study emphasized the necessity of providing training and support to educators in digital technology, enabling them to adapt to the rapidly changing educational landscape. The findings underscored the importance of equipping teachers with the necessary skills and knowledge to navigate online teaching and learning platforms effectively. Furthermore, Schleicher (2020) examined the quality of learning and delivery methods in the classroom. The study emphasized the need to develop a new value proposition that reevaluates the quality of learning experiences and delivery approaches. It called for innovative approaches to enhance the educational process, considering the evolving circumstances brought about by the pandemic.

Aligned with the aforementioned studies, Daniel (2020) provided guidance to students, teachers, management, and parents on effectively embracing asynchronous learning and adopting flexible approaches to counteract the disruptions caused by the pandemic. The research

aimed to aid in the remediation of the adverse effects on students' learning progress. The guidance offered practical recommendations for all stakeholders to adapt efficiently to the new learning environment. Likewise, Chick et al. (2020) undertook research to discover solutions that would ensure the safety of residents, educators, and patients within a surgical residency program during the COVID-19 pandemic. The study proposed three potential measures: the implementation of the flipped classroom approach, online assessments, and teleconferencing. These strategies were identified as means to address the unique challenges posed by the pandemic. Nonetheless, the study emphasized that hands-on learning through operative experience and direct patient care cannot be completely replaced.

Shifting the focus to students' perspectives, Ahmed and Opoku (2022) conducted a study to ascertain how students perceived the practices implemented by their instructors in a HEI amid the COVID-19 pandemic. The findings unveiled that a combination of pedagogical, technological, and psychological factors played crucial roles in shaping students' positive perceptions of online learning experiences during the pandemic. This research shed light on the significance of considering these factors to enhance student engagement and satisfaction within the online learning environment.

In the same context, Ahmed et al. (2023) embarked on a separate study that explored the relationship between pedagogical, technological, and psychological factors and students' satisfaction with online delivery during the COVID-19 pandemic. The research aimed to examine the specific aspects that influenced students' satisfaction with online learning. By analyzing the interplay between pedagogical strategies, technological tools, and psychological well-being, the study provided insights into establishing an optimal online learning environment that meets students' needs and augments their overall satisfaction.

Despite the considerable number of studies addressing the challenges and solutions in online teaching and learning during the COVID-19 pandemic in higher education, a research gap remains regarding the comparison of students' and faculty's perceptions of online teaching methods and their insights into enhancing online education quality. To address this gap, this research aims to conduct a comparative analysis between faculty and student perceptions, building upon the study conducted by Ahmed et al. (2023). Firstly, a comprehensive study within a Higher Education Institution will capture faculty perceptions, experiences, and challenges during the COVID-19 pandemic. The study will employ a rigorous RII (Relative Importance Index) analysis to identify key factors influencing faculty perceptions of online teaching. Then, as part of this research, a comparative analysis will be conducted between the faculty perceptions discovered in this study and the viewpoints of students as evidenced by Ahmed et al. (2023) and earlier studies on students' perception. This comparative evaluation will provide valuable insights into the effectiveness of online teaching from multiple stakeholder perspectives.

The rest of this paper will therefore study the factors that impact on the online delivery in higher education and compare the students and faculty perceptions based on their experience during the COVID-19 era to align the faculty and student expectations and adopt student-centered approaches in online teaching, and propose recommendations for enhancing online teaching practices in the post-pandemic era, especially in a hybrid mode of delivery.

2 Literature review

This section intends to highlight the growing importance of the online mode and shed more light into the different perspectives reported by the body of knowledge regarding its adaptation to support the educational process. The section also looks into studies that report on the students and faculty perceptions of the online mode of learning to draw on some comparisons between the two.

2.1 The importance of online mode of delivery

The education landscape has witnessed the enduring presence of online learning, a result of the continuous integration of evolving technologies and tools that enhance the learning experience (Simonson et al., 2019). Its roots can be traced back to the 1960s when students first began exploring computer-based learning through terminals, even predating the modern internet (Dhawan, 2020). However, the subsequent widespread adoption of the internet and the World Wide Web has propelled online and distance learning to the forefront, leading to its remarkable surge in popularity. This transformative shift has opened up a world of possibilities, enabling a complete reimagining of the traditional classroom and broadening the accessibility of course materials to a larger population of students (Haleem et al., 2022). Moreover, online learning has fostered a culture of collaboration among universities, facilitating partnerships and the sharing of knowledge on a global scale. This collaborative approach is evident in the endeavors of numerous institutions worldwide, which have embraced cutting-edge trends and technologies to specialize in offering online courses (Kentnor, 2015; Dos Santos, 2019). Traditional higher education establishments have also acknowledged the significance of online learning and actively sought to engage larger communities of learners through digital platforms, expanding their educational offerings beyond physical campuses. This collective effort underscores the profound impact and immense potential of online learning in revolutionizing education worldwide.

Online learning, as highlighted by Al Rawashdeh et al. (2021), has been specifically designed to cater for the needs of modern learners, providing personalized engagement on an individual basis regardless of geographical limitations. In response to the COVID-19 pandemic, Ferri et al. (2020) and Hodges et al. (2020) argue that online learning has transformed into an 'alternative mode of delivery,' prompting educators to reflect on different approaches and extract valuable lessons while promoting innovative solutions through remote teaching.

Over time, scholarly literature has consistently highlighted the numerous advantages that online learning brings to the teaching and learning communities. Notably, Al Rawashdeh et al. (2021) emphasizes the timely nature of instructors' feedback as a significant benefit of online learning, favoring it over traditional face-to-face classroom settings. The integration and utilization of modern software platforms such as Blackboard and Google Classroom, coupled with multimedia and interactive tools, further enrich the overall online learning experience for students. Additionally, Dumford and Miller (2018) underscore the convenience and flexibility provided by online learning, enabling individuals with familial or occupational commitments to attend classes without compromising their other responsibilities. Mupinga (2005) emphasizes how online learning alleviates students' fear of public speaking, empowering them to confidently express their thoughts through digital discussion groups, blogs, or journals. Moreover, the cost-effectiveness of online learning has contributed to its widespread popularity, with features like lecture recording reducing additional tuition expenses while granting students the freedom to learn at their preferred pace.

More recently, a series of research papers shed light on various aspects of online teaching and learning. Some studies focused on the teachers and students participation in the online mode of delivery as such; Wang et al. (2023) who examined the impact of EFL teachers' participation in online learning activities on their teaching ability, highlighting the value of technology in Language 2 (L2) education, while Ștefan et al. (2023) investigated the connection between teachers' participation and teaching activities and students' future careers, emphasizing the importance of teacher and student engagement. Furthermore, Misiejuk et al. (2023) analyzed the changes in online course designs during the COVID-19 pandemic, emphasizing the role of institutional leadership in supporting digital transformation. As for the effectiveness of this mode of delivery and the challenges faced other studies have also emerged, for example; Cheung et al. (2023) compared the effectiveness of face-to-face and synchronous online teaching, considering factors such as class size and grading options. Camacho-Zuñiga et al. (2023) explored the challenges and perceptions of professors during the transition to online teaching in emergencies, recommending improved assessment frameworks and teaching strategies. Magd and Jonathan (2023) highlighted the limitations and challenges of online teaching in higher education institutions in Oman, addressing issues like student participation and connectivity. Zhu et al. (2023) also examined changes in students' intention to learn online during the pandemic, identifying factors like prior intention and learning capability. Khan and Viswanathan (2023) assessed the effectiveness of online teaching in Indian higher education, providing strategies for enhancing teaching and learning. Bag et al. (2023) explored the determinants of teachers' intention to use online teaching methods, considering factors like performance expectation and facilitating conditions. These studies have collectively contributed to the understanding of the dynamics and implications of online teaching and learning in different contexts, offering valuable insights into the realm of online teaching and learning, improving educational practices. They have also contributed to our understanding of the opportunities and challenges presented by online teaching, paving the way for the development of effective pedagogical practices and strategies to enhance learning outcomes in both emergency situations and normal times.

The benefits of online teaching have therefore positioned it as a valuable component within hybrid or blended learning models, and it is expected to continue in various forms alongside face-to-face learning even after the pandemic. Online teaching offers distinct advantages such as flexibility, convenience, and accessibility to a wider range of learners. Its ability to transcend geographical barriers allows students to engage in learning regardless of their location. Moreover, the integration of interactive tools, multimedia resources, and collaborative platforms enhances student engagement and promotes active participation in the learning process. The experiences gained during the pandemic have also highlighted the value of online teaching in fostering digital literacy and equipping students with essential skills for the digital age. As educational institutions gradually transition to post-pandemic settings, the integration of online

teaching within hybrid or blended learning approaches will provide opportunities for personalized instruction, individualized learning pathways, and a seamless integration of digital resources. By leveraging the benefits of online teaching alongside face-to-face interactions, educators can create dynamic and comprehensive learning experiences that cater to the diverse needs of students, ensuring an effective and adaptable educational landscape.

As such, the mode of delivery, with its inherent benefits, has found its place in hybrid or blended learning models and is expected to continue in various forms alongside face-to-face learning beyond the pandemic. The flexibility, accessibility, and interactive nature of online teaching have proven invaluable, equipping students with digital skills and fostering personalized learning experiences. Integrating online teaching into the educational landscape enables educators to create dynamic and comprehensive learning environments that cater to diverse student needs.

As online teaching becomes an integral part of educational models, it is essential to understand the factors that influence its effectiveness. While the advantages of online teaching are evident, it is equally important to recognize the challenges and issues that arise when transitioning to this mode of delivery. It is also worth pointing out that a range of studies, including those conducted by Li and Irby (2008), Thongsri et al. (2019), Almazova et al. (2020), Kharouf et al. (2020), Seifert (2020), Bączek et al. (2021), and Laili and Nashir (2021), have examined the practices that impact students' receptiveness to online course delivery. These factors encompass various aspects, such as the instructors' characteristics and qualities. These include establishing a sense of social presence, fostering interactions, facilitating open discussions, building trust, and maintaining prompt communication. Additionally, the quality of course design, encompassing timely and constructive feedback, user-friendly assessment tools, and well-defined grading criteria, plays a crucial role in student engagement. Effective utilization of technology, complemented by the provision of technical support, is essential for creating an engaging and captivating online learning environment. Moreover, the promotion of flexibility through recorded sessions enables students to learn at their own pace. Given the importance of the online mode of delivery and the important role it plays in Higher Education, the rest of this section will develop an undersntading of the students' and faculty perspectives on this mode of delviery.

2.2 Students' perceptions of online learning environments

Extensive research in the literature has broadly examined the various factors that influence learners' perceptions of online learning during the COVID-19 pandemic, as well as the strategies that enhance student engagement within the constraints imposed by the crisis. Notably, Baltà-Salvador et al. (2021) conducted a targeted study focusing on engineering students, which revealed meaningful correlations between academic development and the quality of online classes, course adaptability, workspace conditions, and connections with peers and instructors. The study also highlighted the strong association between students' emotions and their interactions with peers and instructors. Effective teacher communication emerged as a best practice identified in the study, with implications for future courses and engineering education beyond the pandemic. Similarly,

Toquero (2020) shed light on the challenges faced by HEI in the Philippines, while Almazova et al. (2020) examined the Russian context, identifying crucial factors that influence students' satisfaction with online delivery, including computer literacy levels, the electronic learning environment, institutional support, and the preparedness of both faculty and students for online learning. Moreover, Perera and Abeysekera (2022) conducted a study among management students in Sri Lanka, revealing the significant impact of performance expectancy, social influence, effort expectancy, and service quality on students' intention to embrace online learning as an educational method. Collectively, these studies shed light on the multifaceted factors that shape learners' experiences, underscoring the significance of effective communication strategies and various elements of the learning environment in fostering engagement and satisfaction within online learning settings. In the same context, Dos Santos (2022) explored learners' motivations and experiences, highlighting the importance of flexibility, consistent outcomes, and interactive experiences. Their findings offered recommendations to enhance online teaching in the post-pandemic era. Meanwhile, Rodrigo et al. (2022) assessed the impact of COVID-19 restrictions on student satisfaction, revealing that teaching quality was significantly better during periods of increased restrictions. The study emphasized the need for adaptive teaching methods during times of mobility constraints. Other studies such as Mustafa et al. (2022) focused on students' satisfaction and intention to use online teaching modes, emphasizing the influence of personality traits. Agreeableness, conscientiousness, neuroticism, and openness positively impacted satisfaction and adoption intention. These findings informed the sustainable implementation of online teaching models. In their study, Chakraborty et al. (2021) conducted a comprehensive investigation into the opinion of students on online education during the COVID-19 pandemic. Focusing on undergraduate students from an Indian university, the researchers explored the perspectives and experiences of students about online learning. Through a survey that collected responses from 358 students, the study unveiled significant insights into student sentiment. A notable majority of participants (65.9%) expressed a preference for traditional face-to-face classrooms, while 39.9% favored Massive Open Online Courses (MOOCs) as an alternative to online education. However, it was observed that 68.1% of the respondents recognized an improvement in professors' online teaching skills since the pandemic's onset, indicating a positive shift in perception over time. Additionally, a substantial 77.9% of students acknowledged the current usefulness of online education. Nonetheless, the study highlighted concerns related to increased stress levels and perceived impacts on students' health and social lives. Tarazi and Ruiz-Cecilia (2023) investigated Palestinian students' perceptions of online teaching platforms, noting a mix of positive and negative attitudes. Recommendations included improving course design, resources, and teaching strategies to enhance engagement. Lastly, Riaz et al. (2023) examined students' preferences and perceptions of online and offline teaching post-lockdown. Despite vaccination, students still feared COVID-19, preferring online classes for comfort, alertness, satisfaction, and higher exam scores. Collectively, these studies shed light on the multifaceted factors that shape learners' experiences, underscoring the significance of effective communication strategies and various elements of the learning environment in fostering engagement and satisfaction within online learning settings.

Additional research conducted by Aditya (2021) and Khudov et al. (2020) corroborates the idea that students' satisfaction with online instruction is closely tied to the teaching methods and strategies employed by educators, the level of communication and interaction with students, and the effective use of technology to address students' needs. These findings are consistent with the study conducted by Ahmed and Opoku (2022), which employed an online survey and in-depth interviews to investigate engineering students' perceptions of effective practices utilized by their preferred tutors during the sudden transition to online learning amid the COVID-19 pandemic. The study's results, classify the findings into three primary categories: pedagogical, technological, and psychological. Within the pedagogical category, instructional methods, feedback mechanisms, and engagement strategies implemented by instructors are examined. The technological category explores the utilization of technological tools, the availability of resources, and the provision of technical support. Lastly, the psychological category delves into aspects such as instructor-student relationships, motivation, and the establishment of a supportive learning environment. The findings revealed several key categories that influenced students' perceptions. Under the pedagogical category, students valued instructors who delivered materials in a manner similar to face-to-face instruction, provided organized and accessible lecture materials, delivered clear and engaging lectures, and promoted group activities and student interaction. In terms of communication style, students appreciated instructors who listened to class suggestions, responded promptly to inquiries, engaged in chats before/after class, used a positive tone of communication, and sought student feedback. Regarding technology usage, students preferred instructors who demonstrated competence in using online tools, recorded and uploaded lectures, provided pre-recorded lectures, and utilized interactive technologies for enhanced learning experiences. Lastly, in terms of psychological factors, students valued instructors who were helpful, reduced stress and anxiety, showed flexibility, consideration, friendliness, organization, and understanding and cooperation. These findings highlight the importance of various instructor traits in facilitating positive online learning experiences for students.

To build on these findings, Ahmed et al. (2023) investigated the relationship between the constructs in Table 1 and students' perception of online learning during the COVID-19 pandemic. The research focused on a quantitative analysis conducted in a highly regarded HEI in the United Arab Emirates (UAE). The researchers employed Structural Equation Modeling (SEM) to identify and model the relationship between the most significant pedagogical, psychological, and technological factors that influence students' online learning experience. The findings of the study revealed that there are 26 factors

TABLE 1 Factors relative importance index (adapted from Ahmed et al., 2023, with permission from SNCSC).

Factors	RII	Rank
Instructors' teaching style	0.829	1
Instructors' attitude	0.57	3
Instructors' competence with the use of technology	0.63	2
Instructors' communication style	0.46	4

that significantly impact students' perception of successful online delivery. The study particularly highlighted the positive relationship between instructors' teaching style, effective use of technology, and students' perception of successful online learning. This suggests that instructors who employ engaging teaching approaches and leverage technology effectively tend to contribute to students' positive experiences in online learning environments.

To identify the most influential factors affecting students' satisfaction with online delivery, the study utilized Relative Importance Index (RII) method shown in Table 1 which presents a summary of the results obtained through the RII analysis for each criterion and its corresponding sub-factors. The 'Instructor's teaching style' emerges as the most significant criterion, with a relative importance index of 0.829, indicating its strong impact on student satisfaction in online delivery, and is followed by the 'instructor's technological competence' receives an RII of 0.63, demonstrating its considerable influence. In contrast, the instructor's attitude has an RII of 0.57, indicating a moderate impact, while instructor's communication style is ranked as the least significant criterion with an RII of 0.45.

Regarding instructors' Teaching Style, the most important factors for students were an instructor's organization and accessibility of lecture materials (IT2), engaging lectures (IT5), and relevant assignments (IT7). Conversely, the least important factors were promoting group activities (IT6), interactive and fun lectures (IT3), and delivery resembling face-to-face instruction (IT1). In contrast, the most important factors in communication were using a good tone (IC4), followed by quick responses to inquiries (IC2) and listening to class suggestions (IC1). The least important factor in this category was calling for feedback after each lecture (IC5), followed by chats before/after class (IC3). In terms of technology use, recording and uploading lectures (IL2) were highly valued by students. The least important factor was providing recorded lectures before class (IL3). Finally, Instructors' attitude was positively influenced by being helpful (IA6) and organized (IA1) (Table 2).

This paper will expand on the findings of the present study to compare the factors that influence students' and faculty members' perception of online teaching. The subsequent section will focus on exploring faculty perceptions of online learning during the COVID-19 pandemic.

2.3 Faculty perceptions of online learning environments

Faculty members play a crucial role in shaping effective online teaching practices and creating a positive learning experience for students. Several recent studies have explored faculty perceptions in this context. Sidi et al. (2023) investigated teachers' experiences during the transition to online distance teaching, revealing concerns related to social, emotional, cognitive, pedagogical, and system support. Similarly, Meisner and McKenzie (2023) focused on teachers' self-efficacy in online teaching, highlighting the importance of professional learning opportunities and collaboration to enhance educators' skills. While Lucas and Vicente (2022) examined the teachers' perceptions of the benefits and challenges of online teaching and learning, emphasizing the need for a balanced approach that capitalizes on flexibility and accessibility, Mulla et al. (2023) shed light on the influence of learners' expectations, culture, perception, pedagogy, and technology in faculty members' perceptions

TABLE 2 RII students items relative importance index (adapted from Ahmed et al., 2023, with permission from SNCSC).

Factors	RII	Ranking within factor
Instructors' teaching style	**0.82**	
IT1 - The delivery of the material feels the same as f-2-f delivery	0.63	7
IT2 - The instructor is well organized with all the lecture materials made accessible online before the class	0.78	1
IT3 - Lectures are made interactive and fun	0.61	8
IT4 - Lectures are clear with systematic delivery	0.74	2
IT5 - Lectures are engaging	0.63	6
IT6 - Promotes group activities and student-to-student interaction	0.56	9
IT7 - The number of assignments are relevant and reasonable	0.67	4
IT8 - Adjustments to the class timing based on students' needs	0.65	5
IT9 - Flexibility with extending deadlines for assignment submissions	0.70	3
Instructors' style of communication	**0.63**	
IC1 - Listens to the class suggestions	0.76	3
IC2 - Quickly responds to enquiries	0.76	2
IC3 - Chats to the students before/after class and during breaks	0.66	4
IC4 - Uses a good tone of communication with the students	0.79	1
IC5 - Calls for students' feedback after each lecture	0.60	5
Instructors' Use of the Technology	0.46	
IL1 - Competent in using the online tools	0.74	2
IL2 - Records all the online lectures and uploads them on iLearn	0.83	1
IL3 - Provides a recorded lecture before the class	0.51	5
IL4 - Uses interactive technologies to aid learning	0.66	3
IL5 - Runs polls and quizzes in class to engage students	0.65	4
Instructors' attitude	**0.57**	
IA1 - Helpful	0.79	2
IA2 - Reduces stress and anxiety	0.65	7
IA3 - Flexible	0.74	5
IA4 - Considerate	0.73	6
IA5 - Friendly	0.78	3
IA6 - Organized	0.80	1
IA7 - Understanding and cooperative	0.76	4

Bold values identify the most significant criteria, indicating their strong impact on student satisfaction in online delivery.

and challenges within the United Arab Emirates. Additionally, Banerjee et al. (2023) highlighted concerns about student well-being and the need for further research on the role of edunudges in promoting the adoption of online teaching tools. In contrast, Jiang et al. (2023) highlighted differences in attitudes toward online teaching becoming the norm across disciplines, emphasizing the importance of infrastructure, disciplinary considerations, and teacher training. Similarly, Hidalgo-Camacho et al. (2023) acknowledged the challenges while recognizing the value of online teaching in English as a Foreign Language (EFL) education and its implications for teaching practices and student outcomes. Meanwhile, Lim (2023) emphasized the significance of pedagogical and online communication readiness in improving instructors' experiences and outcomes. Furthermore, Scherer et al. (2023) delved into gender differences in teachers' readiness, highlighting variations in cognitive activation practices, self-efficacy, and associations with perceived

institutional support. Madani et al. (2023) explored faculty acceptance in Saudi Arabia, offering insights for educators, institutions, and policymakers, while Khong et al. (2022) examined teachers' behavioral intentions in the post-pandemic era, identifying the collective effects of Technological Pedagogical Content Knowledge (TPACK), perceived usefulness of technology, and innovativeness on teachers' intention to teach online. These studies collectively contribute to our understanding of faculty perceptions, challenges, and opportunities in online teaching. Alqahtani et al. (2022) conducted a national survey in Saudi Arabia to evaluate faculty members' perceptions of online teaching. The majority of respondents had a positive view of the transition, citing adequate support, manageable workloads, and overall satisfaction. However, challenges related to poor internet connectivity and tracking student engagement were identified, emphasizing the need to address infrastructure issues. Similarly, Du et al. (2023) investigated factors

influencing teachers' online teaching performance and satisfaction using the Technology Acceptance Model, Expectation Confirmation Model, and Computer Self-Efficacy. Their study offers valuable insights for enhancing teachers' satisfaction and performance in online teaching. These papers highlight the significant role of faculty members in shaping effective online teaching practices and ensuring a positive learning experience for students. The studies examined faculty perceptions, covering various aspects such as experiences during the transition to online teaching, self-efficacy, benefits and challenges of online teaching, learner expectations, and the role of technology. Concerns related to student well-being and the need for further research on promoting the adoption of online teaching tools were also identified. Differences in attitudes across disciplines, gender variations, and the importance of readiness and acceptance were explored.

However, despite the extensive research conducted on online teaching and learning in higher education during the COVID-19 pandemic, there remains a significant research gap regarding the comparison between students' and faculties' perception of online teaching methods, and their insights on enhancing the quality of online education. Comparing student and faculty perceptions is crucial for a comprehensive assessment of the effectiveness and impact of online teaching. It provides valuable insights into the alignment or divergence of expectations, experiences, and learning outcomes. This comparative analysis can shed light on areas of agreement or discrepancy, highlighting potential challenges and areas for improvement in online teaching practices. Moreover, the comparison of student and faculty perceptions fosters collaboration and dialogue between these two key stakeholders in education.

To address the aforementioned research gap, this paper aims to compare the perceptions of students and faculty regarding online teaching. Building upon the findings of Ahmed and Opoku (2022) and Ahmed et al. (2023). This paper will therefore share the findings of a qualitative study that identifies the main challenges and concerns that affected their effective delivery, in addition a quantitative study using a comprehensive survey involving faculty members from the same HEI studied by Ahmed and Opoku (2022) and Ahmed et al. (2023). Through the application of a rigorous Relative Importance Index (RII) analysis, this paper seeks to identify the key factors that influence faculty perceptions of online teaching. By analyzing the survey data, this study will provide valuable insights into faculty perspectives, highlighting areas that require attention and improvement in online teaching practices. Moreover, this paper will compare the faculty's perceptions with the student perceptions uncovered by Ahmed et al. (2023, allowing for a comprehensive evaluation of online teaching effectiveness from multiple stakeholder perspectives.

3 Methodological approach

The main aim of this study is to compare the faculty perceptions of the online mode of delivery in higher education based on their experience during the Covid pandemic, with the students' perceptions of the online delivery. The methodology employed in this study follows a sequential process which comprises of both qualitative and quantitative data collection methods as described below.

a- Literature review - The literature section of this study underpins the constructs of the criteria that impact on students'

perceptions of the online delivery based on their experience during the Covid Pandemic. The RII analysis conducted by Ahmed et al. (2023) are therefore used in this study to compare the students' perceptions with the faculty perceptions of the online mode of delivery.

b- Faculty interviews - A set of semi structured interviews were conducted targeting faculty members at a higher education institution, to draw on their experience of the online delivery amid COVID-19. As such, the participants are asked to give their views on the most concerning, discouraging and challenging factors of the online delivery in addition to the perceived effective practices of the online delivery. A thematic analysis of the responses is then conducted to categorize and underpin the faculty responses, prior to the quantitative study.

c- Faculty surveys - A comprehensive survey is designed, building on the interview results, to gather valuable insights into the experiences and perspectives of faculty members of the online mode of delivery of teaching. The survey specifically is devised into several sections requesting the participants to rate the significance of the factors identified by the qualitative study in order to rate the factors in terms of their relative importance using the Relative importance index (RII) analysis, using SAS statistical software.

d- Data analysis - The results of the RII which rank the most significant factors contributing to faculty members' perceptions of the online delivery in view of the challenges faced during the COVID-19 pandemic are used to compare the most significant factors ranked by the students in relation to the students' perceptions of the online delivery (based on the RII analysis from Ahmed et al. (2023)).

Data for this study was gathered from an independent nonprofit educational institution situated in UAE, which is the same organization studied in Ahmed et al. (2023). The institution is highly regarded for its exceptional educational practices, extensive research initiatives, scholarship opportunities, and its commitment to nurturing future leaders. It has earned a prestigious position among the top 25 percent of institutions globally, according to the QS World University Rankings 2024. The institution takes great pride in its diverse student body, representing more than 100 different nationalities. The data collection tools are designed and administered to the participants in the English language, while all the ethical procedures were followed, and the Institutional Research Board (IRB) ethical approval was obtained.

4 Data collection and analysis

This section presents the findings of both qualitative and quantitative studies conducted on faculty and instructors within the previously identified academic institution.

4.1 Qualitative analysis

This study conducted 15 semi-structured interviews with faculties who were identified by the students to have effectively engaged in the online mode of delivery amid COVID-19 to identify the main

FIGURE 1
Faculty perceptions of online delivery.
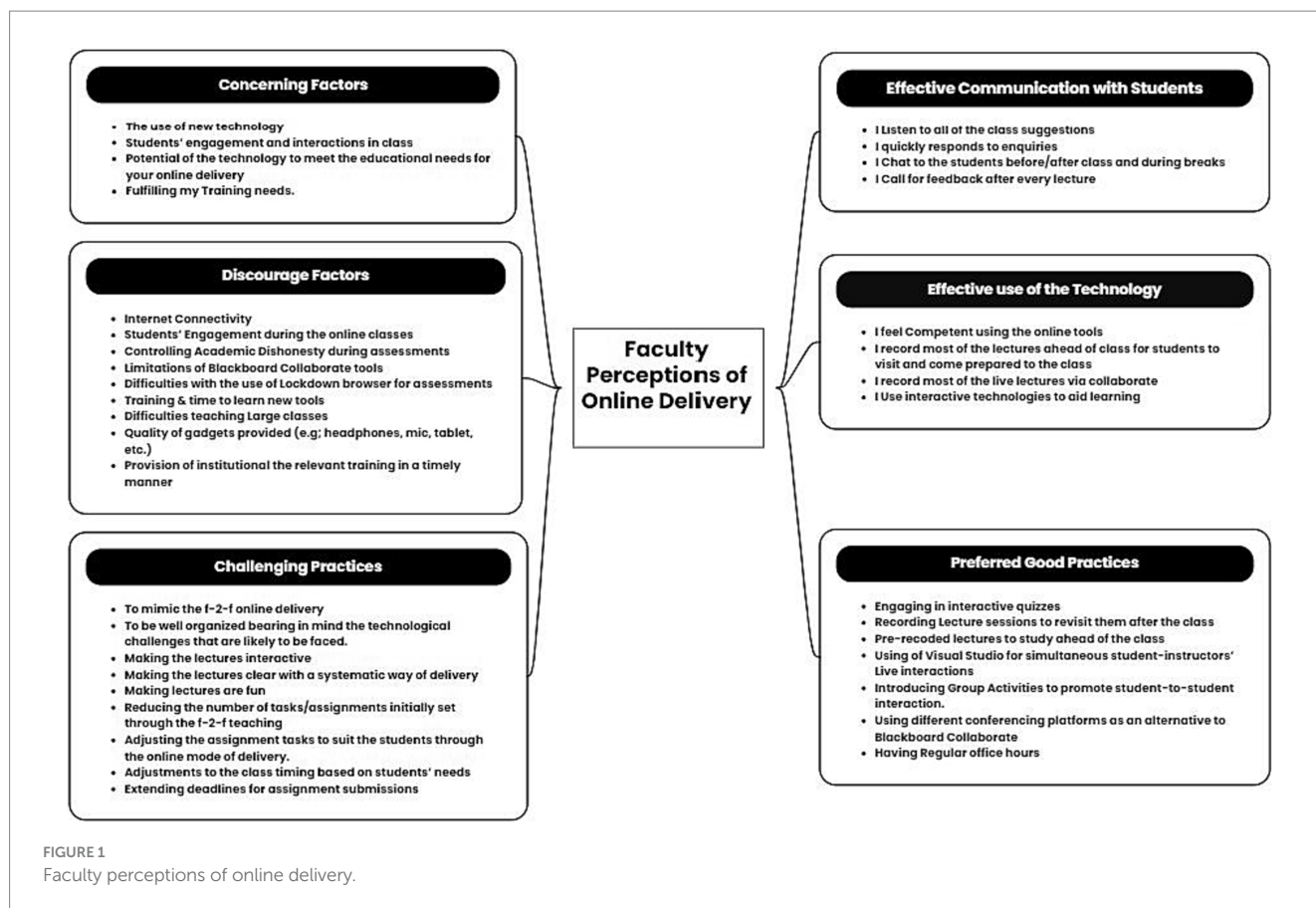
challenges and concerns that had impacted on their effective delivery. The participants were asked to elaborate on;

- The most concerning factors due to migrating online amid COVID-19.
- The actors are likely to discourage them from delivering their courses online based on their COVID-19 online teaching experience.
- The practices they feel are most challenging for the delivery of your courses.
- The practices adopted to effectively communicate with the students during the online mode of delivery.
- The practices adopted with the 'Use of the Technology' during the online mode of delivery.
- Their preferred good practice in relation to their online delivery.

The thematic analysis of the interview results are summarized in Figure 1.

These identified factors are utilized to construct the faculty survey, aiming to obtain a more comprehensive understanding of the faculty's perceptions regarding these factors and their relative significance.

4.2 Quantitative analysis

The online survey conducted for this study encompassed faculty members from various colleges at the identified HEI. The participants were asked to rate their perceptions of the significance of the factors

identified by thematic analysis of the qualitative study (Figure 1). The rest of this section displays the survey results and their analysis.

4.2.1 Sample profile

The survey was distributed at the university level, including the College of Engineering, School of Business Administration, and College of Arts & Sciences and resulted in a collection of 51 responses. The sample size consisted of 39 male respondents (76.5%) and 12 female respondents (23.5%). The majority of participants held positions at the Professor level. The composition of the demographic profile of the participants is summarized in Table 3.

4.2.2 RII analysis of the faculty perceptions of the online delivery of teaching

To gain a deeper insight into the factors that have the most significant impact on the faculty perceptions of the online delivery amid their COVID-19 teaching experience, a relative importance index survey was conducted by using a Likert scale of 1–5 from 1 (low) to (high) for factors listed in Table 1. As such, a Relative Importance Index (RII) was calculated using the Equation (1), whereby W = weighting as assigned on Likert's scale by each respondent in a range from 1 to 5, A = Highest weight (here it is 5), and n = Total number in the sample.

$$RII = \frac{\sum W}{A * n} = \frac{5n_5 + 5n_4 + 5n_3 + 5n_2 + 5n_1}{5n} \qquad (1)$$

A value greater than 0.7 suggests that the factor has a significant influence on the perception of online teaching. This means that the

TABLE 3 Participants' profile.

Demographic profile		
Gender	Male	39 (76.5%)
	Female	12 (23.5%)
College	College of engineering	25 (49%)
	School of business administration	7 (13.7%)
	College of arts and sciences	19 (37.3%)
Current Position	Professor	22 (43.1%)
	Associate professor	15 (29.4%)
	Assistant professor	8 (15.7%)
	Senior lecturer	1 (2%)
	Senior instructors	5 (9.8%)
Dept	PhD	7 (13.7%)
	Msc	27 (52.9%)
	Undergraduates	49 (96.1%)

factor plays a crucial role in shaping individuals' views and attitudes toward online teaching. On the other hand, a value lower than 0.7 indicates a relatively lower impact, suggesting that the factor may have a less pronounced influence on perception.

As such, the survey was divided into two sections. Section I sought the faculty perceptions of the most significant concerns, discouraging factors and challenging practices of the online mode of delivery. Section II sought the faculty's perceptions of the most significant practices that ensure effective communications with the students, use of technologies and utilized good practice. The rest of this section discusses these results.

Section I – Table 4 shows the analysis of the faculty ranked criteria based on their significance to the online mode of delivery, as discussed below:

➤ The most concerning factors of the online delivery - The results show that there is consensus among faculty that the most significantly concerning factor during the online delivery of teaching is facilitating the 'students' engagement and interactions in class' (0.94), while there is a slight concern regarding the 'potential of the technology to meet educational needs' (0.67). The faculty however do not seem to perceive 'fulfilling their training needs' or their ability to use a new technology for the online mode of delivery as a concern. This emphasis underscores the critical role that faculty members attribute to 'student engagement and interaction' as a pivotal component for successful online course delivery, both during the transition period and in the post-pandemic era. Faculty members recognize the significance of active student participation and interaction in fostering a conducive online learning environment. Consequently, they prioritize strategies and interventions that promote student engagement to address the challenges associated with online teaching and ensure a rewarding and meaningful learning experience for their students.

➤ Factors that are likely to discourage you from delivering online courses online based on the current online experience - The results show that among the listed factors, faculty

members ranked 'Students' Engagement during the online classes' as the most challenging factor. This highlights the importance faculty members place on promoting active student participation and interaction in the online learning environment. It suggests that faculty members may perceive difficulties in maintaining student engagement and fostering meaningful interactions as a potential obstacle to effective online course delivery in the post-pandemic period. One noteworthy factor highlighted in Table 3 is the concern about 'controlling academic dishonesty during assessments'. It ranks high in faculty members' potential discouragements from delivering courses online post COVID-19. This underscores the importance of upholding academic integrity and honesty in the online learning environment. Faculty members recognize the challenges associated with 'ensuring fair assessments and preventing cheating' in a virtual setting. This finding highlights the need for effective strategies, tools, and policies to address academic dishonesty and maintain the credibility of online assessments. It also emphasizes the importance of fostering a culture of integrity and promoting ethical behavior among students in the online learning context. On the other hand, it is worth noting that factors such as the 'sudden migration to online delivery' and the 'use of technology', as well as the 'quality of gadgets provided', were perceived as less concerning and challenging by faculty members. This finding could be attributed to the support and training provided by the identified HEI, which is known to have Smart Campus facilities and offers annual training to its faculty and staff members. The availability of training and institutional support may have mitigated some of the concerns related to technology adoption and equipment quality, leading to faculty members ranking these factors lower in terms of discouragement from delivering courses online.

➤ The practices that they feel are most challenging for the delivery of their courses - Among the listed practices, faculty members ranked "Making the lectures interactive" as the most challenging practice. This highlights the difficulty that faculty members face in fostering interactivity and student engagement in the online learning environment. It suggests that faculty members perceive the need to create interactive and engaging learning experiences as a significant challenge in the online delivery of courses. In addition, faculty members also ranked "To mimic the f-2-f online delivery" as a challenging practice. This finding further supports the earlier observation that faculty members find it challenging to replicate the face-to-face classroom experience in an online setting. It emphasizes the importance of finding innovative ways to create a similar level of interaction, collaboration, and dynamic instruction in the online learning environment. Other practices such as "Making the lectures clear with a systematic way of delivery" and "Making lectures fun" were also perceived as less challenging by faculty members. These findings highlight the complexities involved in effectively delivering course content in an engaging and organized manner online.

Section II - Table 5 shows the faculty perspective of the viability and preferred approaches to effective online course delivery as discussed below;

TABLE 4 RII faculty about most significant concerns, discouraging factors and challenging practices of the online mode of delivery.

Factors	1	2	3	4	5	RII	Ranking within factor
Most concerning factors of the online delivery							
The use of new technology	21	12	8	8	2	0.43	4
Students' engagement and interactions in class	1	2	7	3	38	0.89	1
Potential of the technology to meet the educational needs for your online delivery	4	10	13	14	10	0.66	2
Fulfilling my training needs	17	12	13	7	2	0.46	3
Factors are likely to discourage you from delivering your courses online post COVID-19 based on your current online experience							
Internet connectivity	16	9	12	9	5	0.51	6
Students' engagement during the online classes	1	4	3	9	34	0.87	1
Controlling academic dishonesty during assessments	3	1	8	9	30	0.84	2
Limitations of blackboard collaborate tools	8	16	12	9	6	0.55	5
Difficulties with the use of lockdown browser for assessments	11	5	15	8	12	0.61	3
Training &time to learn new tools	24	16	5	4	2	0.38	9
Difficulties teaching large classes	16	6	10	10	9	0.56	4
Quality of gadgets provided (e.g., headphones, mic, tablet, etc.)	21	12	9	8	1	0.42	8
Provision of institutional the relevant training in a timely manner	19	12	11	8	1	0.44	7
Practices you feel are most challenging for the delivery of your courses							
To mimic the f-2-f online delivery	2	5	12	16	16	0.75	2
To be well organized bearing in mind the technological challenges that are likely to be faced	14	11	16	9	1	0.49	6
Making the lectures interactive	3	6	8	16	18	0.75	1
Making the lectures clear with a systematic way of delivery	9	18	13	10	1	0.50	5
Making lectures are fun	8	5	13	13	11	0.64	3
Reducing the number of tasks/assignments initially set through the f-2-f teaching	16	12	16	5	2	0.46	7
Adjusting the assignment tasks to suit the students through the online mode of delivery	6	10	14	11	10	0.63	4
Adjustments to the class timing based on students' needs	21	6	13	9	2	0.46	8
Extending deadlines for assignment submissions	21	7	17	3	3	0.44	9

➤ Communicating with the students - The analysis of factors related to the feasibility of adopting certain communication practices through online delivery reveals that faculty members consider "Quickly responds to enquiries" as the most feasible and important practice. Additionally, "Chats to the students before/ after class and during breaks" ranked second, indicating its perceived importance for online communication. "Listened to all of the class suggestions" ranked third within the factor. However,

"Call for feedback after every lecture" ranked fourth, suggesting it may be less important in online course delivery.

➤ Use of the technology' during the online mode of delivery - The findings show that faculty members are confident in utilizing technologies and online tools for effective online teaching. Specifically, they perceive themselves as competent in using online tools and believe in the feasibility of recording live lectures via collaboration platforms. Among the preferred practices, faculty

members highly prioritize the use of recorded lecture sessions for students to revisit after class. This suggests that faculty members recognize the value of providing recorded lectures as a resource for students to review and reinforce their learning.

➢ Preferred practices - The RII analysis of preferred practices reveals that faculty members prioritize "Recorded Lecture sessions to revisit after the class" as the most important practice, followed by "Regular office hours" and "Group Activities to promote student-to-student interaction." Other practices, such as interactive quizzes, alternative conferencing platforms, visual studio usage, and pre-recorded lectures, also offer insights into faculty preferences. These findings enhance understanding of effective teaching approaches in online settings.

These findings will be further discussed in the next section to draw some comparisons between the faculty and students' perspectives of the online mode of delivery.

5 Comparative analysis of faculty and student perspectives on online teaching

In this section, a comprehensive evaluation of online teaching effectiveness will be achieved by comparing the faculty perceptions obtained in this study, as detailed in section 4, with the findings on students' perception from previous studied in the literature review section. This comparative analysis aims to identify areas of convergence and divergence between faculty and student perceptions, shedding light on the strengths and areas for improvement in online teaching practices. The alignment between faculty and student rankings highlights shared priorities, providing valuable guidance for educators and institutions in designing online courses that cater to the needs and preferences of both stakeholders. These insights contribute to a more effective and engaging online learning experience, benefiting both faculty and students.

Beginning with the study conducted by Ahmed et al. (2023) on students' perceptions, a comparative analysis of faculty and student viewpoints concerning the online mode of delivery exposes various similarities and differences:

➢ Instructors' style of communication - The most important similarity between students and faculty perceptions of online teaching is their recognition of the importance of effective communication and interaction in the online learning environment. Both students and faculty value practices that promote engagement, responsiveness, and open communication channels. For students, factors such as instructors listening to their class suggestions, responding quickly to their inquiries, and engaging in chats before/after class are highly important. Similarly, faculty perceive factors such as students' engagement and interaction in class, the potential of technology to meet educational needs, and the use of interactive technologies as significant for successful online delivery.

➢ Use of technology - Both faculty and students value the use of technology to enhance learning. Faculty members perceive being competent in using online tools and recording lectures as feasible and preferred practices. Similarly, students express appreciation

for interactive technologies and the provision of recorded lectures for revisiting after class. These commonalities indicate a shared belief in the benefits of technology in facilitating engagement and knowledge retention in an online environment. This shared emphasis on instructor competence in technology highlights the understanding that instructors play a crucial role in facilitating effective online teaching and learning. Both students and faculty value instructors who are knowledgeable and skilled in utilizing technology to create engaging and interactive online learning environments.

By acknowledging these perception similarities, faculty can design online courses that prioritize student engagement, incorporate interactive teaching methods, and provide opportunities for open communication and collaboration. This can lead to enhanced student satisfaction, improved learning outcomes, and a more positive overall online learning experience. On the other hand, institutions can prioritize faculty development and training programs that enhance instructors' technological competencies. Providing support and resources to help instructors develop their skills in using online tools can lead to improved instructional practices, increased student engagement, and enhanced overall satisfaction with online teaching and learning delivery.

➢ Instructors' teaching style - In terms of the faculty teaching style, there are notable differences between faculty and student perceptions. Faculty members prioritize practices related to the delivery and organization of lectures, such as mimicking face-to-face delivery and making lectures clear and systematic. On the other hand, students prioritize practices that directly impact their engagement and interaction, such as the instructor's teaching style and the use of interactive quizzes. These differences suggest that while faculty members focus on instructional strategies and content delivery, students place greater emphasis on their active involvement and participation in the learning process.

Students also value organization, relevance and reasonableness of assignments, and flexibility with deadlines. Their perception is driven by their role as instructors and their responsibilities in delivering course content effectively and efficiently.

➢ Instructors' attitude - Students seem to place greater emphasis on the qualities and characteristics of instructors that contribute to their learning experience. They value instructors who are well-organized, engaging, and make lectures interactive and fun. Students also value instructors who listen to their suggestions, respond to their inquiries promptly, and use a friendly and considerate tone of communication. Their perception is influenced by their desire for a positive and engaging learning environment that supports their academic growth and meets their individual needs.

When comparing the faculty and student perceptions in the study conducted by Chakraborty et al. (2021), several similarities and differences also come to light. Both faculty and students acknowledged the significance of student engagement in online learning. Faculty placed a strong emphasis on facilitating student engagement and interactions during online classes, while students expressed a preference for traditional in-person classrooms, where they presumably experience more engagement with peers and professors. Additionally, both groups recognized the improvement in professors'

TABLE 5 RII faculty perception about online mode of delivery — feasibilities & preferences.

Factors	1	2	3	4	5	RII	Ranking within factor
How feasible it would be to adopt the following practices through the online mode of delivery with the online delivery of your course of study in relation to: communicating with the students							
Listened to all of the class suggestions	2	6	19	13	11	0.69	3
Quickly responds to enquiries	3	5	9	17	17	0.75	1
Chats to the students before/after class and during breaks	4	7	8	14	18	0.73	2
Call for feedback after every lecture	8	7	13	10	13	0.65	4
Please give a score to the criteria below to evaluate your 'Use of the Technology' during the online mode of delivery							
I feel Competent using the online tools	1	2	3	21	24	0.85	2
I record most of the lectures ahead of class for students to visit and come prepared to the class	34	2	4	2	9	0.40	4
I record most of the live lectures via collaborate	5	1	4	3	38	0.86	1
Uses interactive technologies to aid learning	3	2	16	7	23	0.77	3
Preferred practices							
Engaging in interactive quizzes	15	3	15	8	10	0.58	4
Recorded Lectures sessions to revisit after the class	3	1	8	7	32	0.85	1
Pre-recoded lectures to study ahead of the class	37	4	5	2	3	0.32	7
Use of visual studio for simultaneous student-instructors' live interactions	23	3	11	8	6	0.48	6
I introduce group activities to promote student-to-student interaction	15	3	13	5	15	0.60	3
Use different conferencing platforms as an alternative to blackboard collaborate	20	6	10	0	15	0.53	5
Regular office hours	5	2	11	1	32	0.80	2

online teaching skills over time, indicating a positive adaptation to the new teaching format. However, there were also notable differences between faculty and student perspectives. Faculty members displayed confidence in utilizing technology for effective online teaching, perceiving themselves as competent in using online tools. Conversely, students expressed concerns about the impact of online education on their health and social life, highlighting the stress associated with prolonged screen time and the lack of face-to-face interactions. Moreover, students expressed a preference for MOOCs over their university's online education setup, suggesting that certain online learning platforms may have been more effective for their learning needs. While both faculty and students recognized the usefulness of online education during the pandemic, faculty perceptions focused on aspects like effective communication with students and the use of technology, whereas students appreciated the availability of software and online study materials to support their learning.

More generally, comparing the faculty perception study with various studies about student perceptions of online teaching, it becomes evident that both stakeholders offer valuable insights into the challenges and experiences encountered during the COVID-19 pandemic. In the faculty perception study, faculty members identified the most concerning factors during the online delivery of teaching, with a strong emphasis on facilitating students' engagement and interactions in the virtual classroom. This aligns with the findings of several studies on students' perceptions, which also highlight the importance of effective teacher communication, peer interactions, and

connections with instructors in fostering engagement within the online learning environment (Almazova et al., 2020; Khudov et al., 2020; Toquero, 2020; Baltà-Salvador et al., 2021). Furthermore, faculty members expressed concerns about the potential of technology to fully meet educational needs. This echoes the findings of studies on student perceptions that discuss factors like course adaptability, the electronic learning environment, and computer literacy levels as crucial determinants of students' satisfaction with online delivery (Almazova et al., 2020; Perera and Abeysekera, 2022). Faculty members also highlighted challenges in making lectures interactive and replicating face-to-face classroom experiences in the online setting. Similarly, students in various studies have expressed preferences for traditional face-to-face classrooms (Chakraborty et al., 2021).

Regarding differences in perceptions, while faculty in the conducted study expressed concerns about the potential of technology to meet educational needs and the challenges in making lectures interactive, students were more concerned about the accessibility and user-friendliness of online platforms, their ability to navigate digital tools, and access course materials smoothly. This discrepancy indicates the distinct roles and responsibilities of faculty and students in the online learning process. Moreover, while faculty members in the conducted study felt confident in utilizing technology and online tools for effective teaching, student perception studies have shown that students' satisfaction with online instruction is closely tied to the faculty's effective use of technology (Khudov et al., 2020; Aditya,

2021). Additionally, the preferred practices between faculty and students differ. While the faculty perception study highlighted the significance of recorded lecture sessions for students to revisit after class, students value diverse and engaging learning experiences, including interactive quizzes, group activities, and alternative conferencing platforms. This divergence in preferred practices suggests that students may seek dynamic and interactive elements in the online learning process to maintain motivation and active engagement. Furthermore, in terms of comfort and satisfaction with the virtual learning environment, the faculty perception study primarily explored faculty members' perceptions of challenges and practices in online teaching, whereas a study by Riaz et al. (2023) delved into students' comfort levels, satisfaction, and overall experiences with online learning. The latter study found that despite vaccination, students still preferred online classes for comfort, alertness, satisfaction, and higher exam scores. This highlights the multifaceted nature of students' perceptions and experiences with online education.

This difference in perception underscores the importance of aligning faculty and student expectations in online teaching. It highlights the need for faculty to not only focus on the practical aspects of technology use and course delivery but also consider the impact of their teaching style, attitude, and communication on student satisfaction and engagement. By understanding these differences, faculty can adapt their teaching approaches and prioritize student-centered practices to enhance the overall online learning experience.

Therefore, recognizing these similarities and differences is crucial for educators and institutions to tailor their online teaching approaches to effectively meet the needs and expectations of both faculty and students. By aligning instructional practices with shared priorities and addressing divergent perspectives, educators can create a more engaging and impactful online learning experience. Understanding this difference is also crucial for bridging the gap between faculty and student expectations. It highlights the importance of faculty incorporating student-centered approaches, such as interactive teaching methods and effective communication, to create an engaging and supportive online learning environment. By aligning their perceptions and adapting their teaching strategies accordingly, faculty can enhance student satisfaction and facilitate meaningful learning experiences.

6 Discussion, conclusions and future work

Within the extensive body of research investigating the dynamics of online teaching and learning during the COVID-19 pandemic in higher education, a noticeable gap remains in fully exploring the shared and divergent viewpoints of both faculty and students regarding online teaching approaches. This study seizes the opportunity to address this gap by conducting a comparative exploration, juxtaposing the perspectives of educators and learners. Building upon earlier research, this investigation embarks on a dual-fold journey. It begins with a thorough investigation within a HEI, meticulously capturing the complex landscape of faculty perceptions, experiences, and challenges related to online teaching during the COVID-19 pandemic. Utilizing the robust analytical tool of the RII, this study aims to methodically uncover the pivotal factors shaping

faculty views on online pedagogy. Subsequently, the inquiry widens its scope, crafting a comparative study by linking the faculty perceptions unveiled through this comprehensive analysis with the insights derived from students' viewpoints. This thoughtfully curated comparative study sheds light on the multifaceted dimensions of effective online instruction, presenting a significant contribution to the field of educational research.

The findings of the qualitative and quantitative study on faculty perceptions revealed that faculty members prioritize student engagement and interactions as the most concerning factor during the transition to online teaching. This emphasizes the significance they place on creating a conducive online learning environment that promotes active student participation. Faculty members also expressed concerns about controlling academic dishonesty during assessments, highlighting the need for strategies and policies to maintain integrity in online assessments. Challenging practices identified by faculty members included making lectures interactive, mimicking face-to-face delivery, and ensuring clear and systematic delivery of course content. These findings underscore the complexities involved in adapting instructional practices to the online environment and the need for innovative approaches to foster engagement and effective content delivery. Faculty members also identified feasible and preferred practices for online teaching, such as quick responses to student inquiries, engaging in chats before/after class, and providing recorded lectures for students to revisit. These practices align with their commitment to effective communication, student support, and the use of technology to enhance the learning experience. The findings highlight the importance of addressing faculty members' concerns, aligning their perceptions with best practices in online teaching, and providing support and resources to enhance their effectiveness in the online learning environment. By understanding faculty members' perspectives, institutions can better support their transition to online teaching and promote student engagement and success in online courses.

As a second step if this research a comparative analysis of faculty and student perspectives on online teaching has been conducted to provide valuable insights into the practices and factors that are considered important in the online mode of delivery. The alignment between the rankings of faculty and students emphasizes areas of agreement and shared priorities, which can guide educators and institutions in designing effective online courses. The analysis revealed both similarities and differences between faculty and student perceptions. Both groups recognized the significance of effective communication, interaction, and the use of technology in online learning. Faculty focused on instructional strategies and content delivery, while students prioritized their active involvement and engagement. These differences highlight the need to align faculty and student expectations, with faculty incorporating student-centered approaches to create an engaging and supportive online learning environment. By considering these findings, educators and institutions can bridge the gap between faculty and student perspectives, leading to enhanced student satisfaction and improved online learning outcomes.

This research holds significant importance in the field of online teaching and has several implications for practice. By identifying the factors that shape faculty perceptions of online teaching, this study offers valuable understanding of the challenges and concerns educators face during the transition to online instruction. Gaining

insight into these factors can guide the creation of specific strategies and interventions that address faculty requirements and improve their proficiency in delivering online courses. Furthermore, the research findings can guide institutions in designing professional development programs that focus on the specific areas identified as crucial for faculty satisfaction and success in online teaching. By incorporating the recommendations and addressing the limitations highlighted in this study, universities can improve their support for faculty, optimize online teaching practices, and ultimately enhance the overall quality of online education. This research serves as a foundation for ongoing exploration and improvement in the field, fostering continuous growth and innovation in online teaching methodologies.

Based on the perceptions of faculty and students regarding online teaching, the study makes a set of conclusions;

- Effective communication: Both faculty and students agree on the importance of effective communication. This opens up a discussion on strategies and best practices for fostering clear and efficient communication in an online learning environment.
- Alignment of priorities: It would be interesting to explore the reasons behind the differences in priorities between faculty and students. Discussing these variations can shed light on the differing expectations and needs of both groups.
- Technology use and competence: Faculty and students recognize the significance of technology in online teaching. This presents an opportunity to discuss ways to enhance faculty members' competence with online tools and platforms, ensuring a seamless and engaging learning experience for students.
- Teaching style and engagement: The perceptions of faculty and students regarding teaching style and engagement highlight the importance of creating an interactive and engaging learning environment. The focus on effective instructional strategies and techniques to promote student engagement and active participation in online classes is therefore important.
- Student-centered approach: Both faculty and students emphasize the importance of instructors being helpful, organized, and responsive. Innovative ways should be explored to further enhance the student-centered approach in online teaching, ensuring that students' needs, suggestions, and feedback are valued and incorporated into the instructional process.

These perceptions provide a starting point for meaningful discussions on improving online teaching practices, enhancing student satisfaction, and creating a supportive and engaging virtual learning environment.

The limitations of the faculty RII analysis conducted in this study include a relatively small sample size of faculty members from a single university, which may limit the generalizability of the findings to other institutions. Additionally, the analysis may lack diverse perspectives and variations in university contexts that could impact faculty perceptions of online teaching. While the study's findings and implications are rooted in a specific institutional and regional context, it is essential to acknowledge the significance of rendering the conclusions flexible and insightful across varied educational environments. Furthermore, while our study primarily employs interview, questionnaire and survey methods to capture faculty perceptions, we acknowledge the paramount importance of integrating other sources of objective data. These limitations highlight the need to interpret the findings cautiously and complement them with further research, feedback, and ongoing evaluation to gain a comprehensive understanding of faculty perceptions and inform effective strategies for enhancing online teaching.

Based on the identified limitations, future work in the field of online teaching can be guided by several suggestions. Firstly, conducting the RII analysis with a larger and more diverse sample of faculty members would enhance the generalizability of the findings. A longitudinal study tracking faculty perception over time, as well as comparing their perspectives with established best practices in online teaching, would offer valuable insights. Engaging faculty members in action research projects and offering targeted professional development programs would further enhance their skills and confidence in online teaching. In addition, to enhance the adaptability and insights of the study's conclusions across diverse educational landscapes, future research endeavors could focus on incorporating cross-cultural and cross-regional perspectives. This expansion would contribute to a more comprehensive understanding of online teaching dynamics on a global scale by encompassing a wider range of educational institutions and cultural contexts. Additionally, while the current research primarily relies on interview, questionnaire, and survey methods to capture faculty perceptions, future investigations could consider integrating objective data support. Including quantitative metrics such as functionality assessment, frequency of course utilization, and patterns of learning behavior could provide a more comprehensive and robust grasp of the complexities inherent in online teaching dynamics. By pursuing these avenues of future work, researchers can contribute to evidence-based practices that promote effective and engaging online learning experiences for students.

To effectively incorporate online teaching post-pandemic, institutions should consider several strategies. Implementing hybrid learning models, blended learning approaches, and other modes such as the rotation model or flex model can also be beneficial. These approaches allow for flexibility and customization, combining online and face-to-face instruction in different ways. For example, the rotation model involves students rotating between online and in-person learning activities. The flipped classroom model, where students engage with online materials beforehand to maximize in-person interaction, is another effective approach. Prioritizing the quality design of online courses, providing professional development opportunities for faculty, and strengthening student support services are crucial elements in successful implementation. Additionally, institutions should invest in robust technology infrastructure and foster collaboration and partnerships to enhance online teaching practices. By adopting these strategies and exploring various blended teaching modes, institutions can effectively integrate online teaching, providing students with engaging and effective learning experiences.

The future of online teaching holds tremendous potential for transforming education. As technology continues to advance and evolve, online teaching will become more sophisticated, interactive, and immersive. Virtual reality, augmented reality, and artificial intelligence are likely to play increasingly prominent roles in creating engaging and personalized learning experiences. Collaboration and communication tools will become more seamless and intuitive, fostering greater interaction and community among students and faculty. Additionally, the integration of data analytics and learning analytics will enable instructors to gain deeper insights into student progress and tailor instruction to individual needs. The future of online teaching will be characterized by continuous innovation, adaptive learning approaches, and a focus on

learner-centered pedagogies. While there will always be a place for face-to-face instruction, online teaching will increasingly be recognized as a viable and valuable mode of education, offering flexibility, accessibility, and opportunities for lifelong learning.

Data availability statement

The original contributions presented in the study are included in the article/supplementary material, further inquiries can be directed to the corresponding author.

Ethics statement

The studies involving humans were approved by IRB at the American University of Sharjah. The studies were conducted in accordance with the local legislation and institutional requirements. The participants provided their written informed consent to participate in this study.

Author contributions

VA: Project administration, Investigation, Supervising, Methodology, Conceptualization, Writing – original draft, review & editing. CA: Conceptualization, Writing – original draft, review & editing. AZ and SS: Data curation, Formal analysis, Validation, Visualization.

Funding

Conflict of interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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