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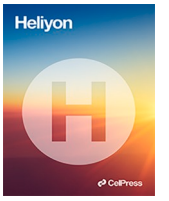

Research article

A tale of online learning during COVID-19: A reflection from the South Asian Association for Regional Cooperation (SAARC) countries

Md Abu Saleh [a,*], Md Irfanuzzaman Khan [a], Shantanu Banerjee [b], Farzana Safi [c]

[a] Canberra Business School, University of Canberra, Bruce Campus, Canberra, Australia
[b] Leaders Institute, 76 Park Rd, Woolloongabba, QLD, 4102, Australia
[c] Central Queensland University, 554-700 Yaamba Rd, Norman Gardens, QLD, 4701, Australia

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ABSTRACT

The COVID-19 pandemic has had a profound impact on the higher education industry around the world. The battle that was fought by institutions and their faculty members to move classes and programs from a face-to-face environment to an online one has resulted in a new set of challenges for them to overcome. In the context of online education, academics working in less developed countries are confronted with quite different realities than their peers working in more developed economies. This article investigates the effect that COVID-19 had on the higher education systems of Bangladesh, India, and Pakistan, three of the most important SAARC nations at a time when these countries were struggling with limited resources, unreliable infrastructure, and a pronounced "digital divide" in higher education. The literature review and in-depth interviews conducted for the purpose of this study uncovered six primary challenges. These challenges were identified as facilitating conditions, technology readiness, learning experience, mental health, concerns regarding performance improvement and sustainability. The findings presented here highlight the necessity for more government intervention and investment in order to: firstly, improve the quality of teaching and learning; and secondly, close the digital divide. Several recommendations are stated in this paper for future research to consider.

1. Introduction

The global impact of the recent coronavirus (COVID-19) pandemic on higher education cannot be overstated. Many countries have begun to examine the implications of COVID-19 on higher education institutions and their responses [1–5]. While "on-line distance study" or "digital education" formed the strategy to sustain education during the unprecedent global pandemic, scholars raised concerns about digital competence of learners in higher education institutions (HEIs) and socio-demographic inequalities in advancing learning [6,7]. For example, university students in Bangladesh struggled with how virtual classrooms work and communicating with their peers during online sessions. Consequently, they had difficulties in online learning, and the majority of students preferred traditional kinds of learning to virtual classes as they could not grasp the format of the latter [8]. On the other hand, a recent survey from Thailand revealed that students are generally satisfied with their experience of online remote teaching [9].

* Corresponding author.
E-mail address: abu.saleh@canberra.edu.au (M.A. Saleh).

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Existing research also shows that the COVID-19 epidemic has widened the digital gap and exacerbated social support networks, both of which are vital for maintaining interpersonal interactions and societal structures in general [10]. The disparity between rich and disadvantaged students is mostly based on family income. Students from less prosperous regions have limited access to digital technologies unlike more privileged students who have an unfair academic advantage [11]. Consequently, contextual factors such as teaching presence (e.g. pedagogical approach, learning design), social presence (e.g. belongingness, interactivity) and cognitive presence (e.g. concrete experience, contextualisation) shape the holistic education experiences of students [12].

The need for such aspects is of fundamental interest to the South Asian Association for Regional Cooperation (SAARC) countries, which have large and relatively youthful populations and cultures that see education as the key to economic growth [13]. SAARC is an economic and political alliance of eight South Asian nations, these being Bangladesh, India, Pakistan, Bhutan, Maldives, Nepal, Sri Lanka and Afghanistan. Despite the catastrophic impact of COVID-19 on the HEIs of the SAARC countries the region has received little attention from researchers. With digital learning becoming an important part of the education environment, our study attempts to explore the effect of digital inequality in the HEIs environment of the SAARC region. It has important ramifications for HEIs' digital strategy strategies and management for students learning effectively in a challenging environment. Keeping in view the turbulence created and the technological environment with the advent of COVID-19, this study examines, through the contingency perspective, how HEIs dealt with issues such as the internet and social divide, inequality in digital readiness of students and institutions, broadly characterised as the digital divide [6,14,15] and online teaching administration. Higher education in the SAARC countries has been significantly affected throughout the epidemic period as a result of the digital divide and related challenges [14].

1.1. Objectives

Drawing from contingency theory, the primary goal of this study is to understand the contingency factors arising from the COVID-19 pandemic and their impact on universities in India, Pakistan, and Bangladesh universities. Although SAARC is an economic and geopolitical grouping, we have chosen three countries that are neighbours and share similar cultures. The findings of this study will help us better understand the challenges that students and instructors face throughout the Indian subcontinent. While the vast majority of research reveals the education experiences of students during 2020–2021, this paper focuses on the plight of academic staff members who also experienced significant challenges while trying to keep up with the changing teaching and research landscape. As a consequence of this research, the faculties' perspective on how universities can better provide students with the learning opportunities and access to digital infrastructure in the post-COVID environment will be better recognised.

1.2. Theoretical lens: contingency theory

In our study, we seek to find answers to the research issues through the lens of contingency theory. Given the unusual volatility, uncertainty and instability of the environment during the COVID-19 pandemic, contingency theory is considered the best lens to examine the management competence and organisational response of the HEIs. Contingency theory emerged out of situational theory of management [16], which has been an integral part of the management literature for the past few years. The contingency theory differentiates between the notions of external and internal fit and strategies for changing the organisation and/or its environment [17]. Organisations can undertake proactive [18] and reactive strategies [19] for coping with environmental changes. An organisation's reactive strategies involve changing its internal design to accommodate the constraints of its environment. Conversely, an organisation can change its industry and institutional environment to better suit its goals and operations through proactive strategies [17].

Following COVID-19, the whole concept of organisational planning in HEIs has gone through dramatic changes as they deal with rapidly changing external environmental and alternative scenarios [20]. In the case of HEIs, contingency theory represents an orientation that enables us to consider them as open systems of interacting subunits faced with uncertainty, and through proactive and reactive strategies such as revision of structure, planning, and leader behaviour, HEIs can achieve acceptable levels of certainty [21]. In a post-COVID-19 world, the need for novel ideas and original approaches to complex situations has never been greater due to rapid changes in digital technologies and artificial intelligence [22]. Hence, organisations require extensive planning for innovation, seeking out unique and competitive ways to build potential within and outside of their organisations, rather than improving internal structural arrangements to match a rather stable environment [17].

In the extant literature, contingency theory has been conceptualised and encapsulated through three key dimensions: (a) effectiveness, (b) environment and (c) contingency, wherein the organisational structure and management style depends on a set of "contingency" factors, particularly the uncertainty and instability evident in a particular environment [23]. As such, organisational performance relies on a myriad of contingency factors such as structure, design, people, technology, and strategy [23]. Organisational structure is a multifaceted idea that acts as a cornerstone in the construction of an organisational design [24]. In contrast, organisation design focuses on aligning process, system, culture and people so that coordination between organisation units is efficient and effective [25]. Coordination is concerned with connecting all units via technology, leadership, and culture [26]. It is important to note that contingent factors such as information system and technology need to be considered when engaging with the stakeolders (people) [27]. A fundamental principle of contingency theory is that for organisations to enhance performance, their strategy and structure must be aligned and a firm's strategy and structure must fit each other if performance is to be enhanced [28]. Thus, it is important for institutions to identify and develop viable relationships between an environment or context and how it is managed [29]. Accordingly, the basic tenet of the theory postulates the extent of institutional adaptability to dynamic changes in the environment.

With the above theoretical background in mind, our paper studies the response of the SAARC HEIs to the sudden arrival and spread of COVID-19 that has turned a contingency environment into a crisis. Such theoretical arguments are very much at the heart of the

Table 1
Comparative snapshot of challenges in extant literature.

Factors/Attributes	India	Bangladesh	Pakistan
The midnight transition – destabilisation of educational activities	Curriculum was not intended for online format, and neither HEIs nor educators could adapt to the e-learning environment.	Students are dissatisfied and astonished by the sudden decision to close all education institutions throughout the country. Furthermore, the lengthy university shutdown and home confinement produced significant interruptions in students' study patterns.	The following issues arose during the transition to a technological mindset: 1) HEC and universities were not very proactive in terms of digital education. 2) The absence of an e-curriculum. 3) A lack of technologically educated personnel to teach online sessions. 4) The abrupt shutdown of institutions essentially terminated student enrolment. 5) In terms of adopting a digital mentality for problem-solving, public and private universities differ.
Internet access in remote places	Limited access to e-learning facilities. Rural/remote places lack the latest technologies, lagging behind in terms of e-content and virtual classes. This creates a digital divide, leaving many students behind.	The students and universities still have limited internet and technical access and facilities. Without solving the issues concerning online education in Bangladesh, active online learning is impossible.	Provision of digital learning throughout the whole country is not possible because of: 1) Poor internet accessibility. 2) Far-flung areas have no internet provision. 3) Female students have comparatively less access to modern devices.
Education assessment system – severely affected	Online student assessment faced uncertainty and confusion with varied and uncoordinated approaches taken by institutions.	Absence of electronic devices such as laptops, cell phones, desktops, and tablets, limited or no internet access, high cost of mobile internet packages or broadband connections, disruption in online lessons. This was due to slow or no internet, and frequent power failures in rural or town locations were major concerns.	Digital education had challenges owing to: 1) Lack of technical gadgets nationwide 2) Some teaching professionals and students resist digital learning and thinking. 3) Unethical online education/ testing. 4) Poor e-administration.
Learning by students	Struggling learners needing supervision run the risk of becoming passive learners, losing interest in their studies due to poor attention spans and other distractions.	No access to the university library for issuing books or journals, and lack of learning materials at home and disturbance in the home environment, complexity to remember read lessons, decline in overall study time and deterioration in motivation and concentration to study subjects at home.	Students do not trust teaching staff because the staff are perceived as technology-ignorant, and they have doubts about digital learning and quality of teaching. There is a lack of students behaving ethically in digital learning.
Factors/Attributes	**India**	**Bangladesh**	**Pakistan**
Role of Government	Numerous projects are being launched by the Indian government through the Human Resource Development Ministry and various departments that fall under it. This network is made up of the UGC as well as its Inter University Centres (IUC), Informational and Library Network (INFLIBNET), and Consortium for Educational Communication (CEC). Teachers, students, and researchers can all use these platforms.	The outbreak hurt business and the private and public sectors, but the government granted RMG and exporters incentives to deal with it. Insufficient government support for HR services in education causes lay-offs in private sector organisations. The government helped students acquire broadband connections but not public or private schools.	The government acted quickly, launching tele-education on national television. The government implemented policy reforms through HEC, and an 'Online Readiness' policy was implemented. The new policy contains tools for universities to establish, facilitate, and expedite several areas of 'Online Readiness.' Technology Support Committee, National Academy of Higher Education, Education Testing Council, Quality Assurance Agency, and National Knowledge Bank were all established under the new policy.
Mental health	Students at universities reported much higher stress levels and significantly worsened feelings of anger, anxiety, loneliness, hopelessness, and unhappiness.	This unprecedented 'home isolation' scenario under lockdown has harmed students' mental health in many ways.	Mental, physical and financial challenges remained unsolved throughout the pandemic.
Technology know-how	Non-tech savvy faculty members are not equipped to handle the challenges of the online learning environment.	There has been an increase in faculty members' use of technology. Many instructors embraced and grew accustomed to a technologically driven learning and working environment.	There is a clear divide. While some faculty members continued to thrive, others are still struggling to cope with the demands of online teaching.

(*continued on next page*)

Table 1 (*continued*)

Factors/Attributes	India	Bangladesh	Pakistan
		Reforms of teaching methods, however, need additional vigour.	

current turbulent COVID-19 situation, especially for the SAARC countries whose academic institutions may be less prepared compared to those in more developed countries. Reflecting on the above, this study found that contingency theory provides the "best approach" that fits the circumstances within which the HEIs were engulfed. The next section provides an overview of the responses from Indian, Bangladeshi and Pakistani universities during the pandemic.

2. Literature scan

Since the topic of this research is a relatively new one, our literature search did not find many studies on it. We searched Google Scholar, Proquest and Ebscohost databases, and conducted an advanced search using the following eleven keywords or phrases: "Covid-19 in higher education in subcontinent", "Covid-19 and universities in Bangladesh", "Covid-19 and universities in Pakistan", and "Covid-19 and universities in India", and "Covid-19 and tertiary education sector". In addition to these terms our search was limited to English, full-text articles published on the above sources. Literature search resulted in a total of 71 articles, out of which a total of 59 papers were identified as relevant to our topic. Surprisingly, none of the relevant studies identified, employed contingency theory to evaluate the impact of COVID-19 on the higher education sector. Thus, the present study provides a unique opportunity to examine the impact of COVID -19 on HEIs through the lens of contingency theory and provides an avenue for significant theoretical and contextual contributions. The primary criterion for inclusion in our literature scan was the use of the terms 'COVID', 'higher education', 'universities' or any of the search terms. Four authors independently assessed the selected articles to ensure they were relevant and finally a total of 26 papers were deemed useable. The literature scan confirms that specific literature devoted to the effect of COVID-19 on the higher education sector in the subcontinent is limited. The key findings are summarised in Table 1 in the next section.

2.1. Responses from India

Like the rest of the globe, the majority of education institutions in India opted for online learning environments to maintain academic activity [30]. With hardly any feasible alternatives, both students and teachers found the switch from long-established face-to-face teaching and learning to online mode to be a completely different experience. The situation is driving a crucial need for a full reform of education, moving away from the traditional in-person classroom structure and towards a predominantly online learning environment [31]. However, converting India's traditional education paradigm to an e-learning digital transformation model requires high internet penetration and dependable connections, especially in a vast country beset with social inequalities, which is a major problem in the country's outlying regions [32]. Additionally, the institutional lack of readiness for virtual classrooms prevented a seamless shift from in-person instruction to distance learning [33]. Since students from poor socio-economic backgrounds cannot afford online learning tools, the concept of fair education is unworkable. Students' academic performance declined as a result of either less contact or reduced consultations with professors, which led to significant learning and/or understanding challenges. The online assessment approach also differed amongst institutions after an initial phase of trial and error for online student assessment within a setting of uncertainty and confusion [34].

2.2. Response from Bangladesh

There are 49 public and 107 private authorised tertiary institutions in Bangladesh. Nearly four million students are enrolled in these institutions [35]. During the early days of the pandemic, HEIs in Bangladesh struggled to remain functional even in the virtual world due to the unfamiliarity of their faculty members with online teaching pedagogy. However, younger faculty staff were much more comfortable when teaching through digital technology methods. Furthermore, access to the digital resources remains a major issue throughout the pandemic period. For example, UGC's survey in May 2020 revealed that 13% of public sector university students do not have a smartphone. Attendance rates for online classes were very poor due to inadequate technological infrastructure including internet coverage and lack of access to digital devices [36]. Digital technologies like Google Meet, Zoom, and Discord were used by Bangladeshi universities to provide online classes. Students at both private and public universities complained about inconsistent internet service. As a response to this problem, both public and private universities entered into agreements with existing mobile phone providers to provide their students with low-cost access to mobile data. The COVID-19 outbreak reveals some fundamental flaws in Bangladesh's technology-based learning capabilities [37].

Internet connectivity and accessibility, logistical support, faculty expertise, technological know-how, budgetary capacity, the sustainability of online labs and practical courses, contentious online testing and evaluation, and other challenges remain unresolved. Students and staff members alike have been severely affected by all of the above challenges [38–40]. Moreover, COVID-19-related sickness, the death of family members or friends as well as financial hardships have caused students of all ages to suffer from physical, mental, and psychological anguish [41,42]. On the issue of COVID-19-related stress, anxiety and depression in Bangladesh's student population (18–30 years of age), it is no surprise that this age group has a higher prevalence of these symptoms [41].

2.3. Response from Pakistan

In the face of COVID-19, Pakistan's tertiary education confronted many critical problems regarding fast and effective transformation from conventional to virtual or online education. The pandemic demanded radical transformation of the traditional education systems. Consequently, HEIs attempted to transform their systems into an online mode of delivery once their classrooms were shut down [43]. Moreover, HEIs had to turn to distance or online learning regardless of funding and infrastructure-related problems [44]. There is a lack of tech-friendly and digitally well-trained staff [45], meaning that the design and development of a new e-curriculum was a difficult objective to achieve [46]. Unfamiliarity with online teaching pedagogy also raised concerns about the quality of teaching [47]. Furthermore, students are also dissatisfied with online education due to inadequate internet access, poor technology, lack of face-to-face contact and interaction with teachers which saps motivation, lack of socialisation, group task issues, and teachers' response times [44]. Their mental health is also another area of concern and they have developed anxiety and depression due to the closure of institutions and loss of normal life activities and routines [48].

Despite the difficulties, the administration launched a number of initiatives and actions to solve the issues [49]. For example, the significance of adopting novel teaching methods was recognised [50] and an 'Online Readiness' policy and programs (HEC COVID-19 Policy Papers) and e-counselling sessions were established [49]. Citizens were given free online IT training, and various online co-curricular activities were introduced so that students could make better use of their time in lockdown [45]. Nonetheless, the common themes emerging from the review reveal that most tertiary education providers found it challenging to deliver a good and consistent quality of online teaching to students [51]. Various technical constraints, such as digital divide, access to technology, inadequate infrastructure, financial situations, etc., meant that the quality of the overall education system declined.

Table 1 summarises the findings from the literature review capturing the key themes and challenges encountered by the tertiary education sector in India, Bangladesh and Pakistan. The themes documented in Table 1 suggest that the major SAARC countries' tertiary institutions had no prior instructional emergency recovery contingency plan in place. All processes from shut down to re-opening lacked adequate pre-emptive action, immediate coordination, and appropriate communication contingency planning. In effect all the required teaching learning mechanisms simply and suddenly stopped. Although some measures were taken through broadcasting channels not all remote learners could access them. Such mechanisms to instil learning resilience were not available for students to build their confidence. A few private universities in Bangladesh, Pakistan and India attempted to keep their teaching and learning mechanisms via online platforms, yet most of the public universities were unable connect their students to any online format.

There does not appear to have been any preceding foundation or contingency plan that may have made it easier to use services like Moodle or other visual panel spaces like Zoom, Skype, Google Meet, WeChat, and YouTube live [52]. Although there are major policy gaps that virtually amount to carelessness, the emergency recovery contingency plan can help direct efforts to deliver comprehensive responses to emergencies. All governments were prompted by the present coronavirus to create robust contingency plans to bridge the "digital divide" between private and public universities, as well as rural and urban communities [53,54]. Additionally, researchers identified several factors, including the infrastructure, historical legacies of teaching and learning cultures, a lack of a forward-thinking perspective, and technical limitations [55]. Improved quality of delivery can be made feasible by routinely improving or redesigning the contingency plans, expanding the skill set, and strengthening the quicker delivery of services, as COVID-19-related conditions arise at a rapid pace. Education personnel will be better able to plan, organise, and control COVID-19-related internal situations if flexible management methods are embraced and implemented. Academic leaders must carefully assess the current circumstances before taking appropriate action based on their knowledge and experience. For the SAARC leadership and policymakers to successfully address the current issues in tertiary education, this research generates some relevant and applicable situational tactics. The issues that have been identified and shown (see Table 1) from a sample of SAARC nations have significant implications for institutional administration.

3. Methodological approach

Our methodology is aimed at identifying and understanding the various contingency factors of structure, people, technology, and strategy which all shaped the performance of higher education systems. This paper is essentially an attempt to increase our knowledge through the recognition, interpretation, and understanding of a phenomenon that is intricately linked to condition-specific settings [56]. This approach agrees with Gioia and Pitre's (1990) idea of theory as statement of concepts and their interrelatedness, subsequently revealing the circumstances of an event [57]. Thus, due to the nature of the issues explored here, the analytical approach of this study is grounded on the interpretivist approach as it seeks to understand COVID-19's impact on the education systems of three SAARC countries, i.e., Bangladesh, India and Pakistan. It does this through the perspective of academic staff. Consequently, the central approach of this applied study is to implement an exploratory qualitative approach which is guided by in-depth interviews of relevant stakeholders.

3.1. Research design

The research design employed here is explained in further detail here.

The qualitative research we choose is more intrusive and less structured than a quantitative technique, allowing the interviewer to gain insights into this important topic [58]. Such a non-directive interview approach enables the interviewer to uncover underlying motives or attitudes toward sensitive issues in a relaxed environment [59], making it possible to explore research phenomena of interest [60]. Therefore, for this study, a smaller sub-sample of participants was drawn for semi-structured in-depth interviews. For our qualitative interviews, we select purposive sampling conforming to certain criteria held by the respondents [61]. This approached

initially allowed us to select two (2) academics from Bangladesh, three (3) from India and two (2) from Pakistan. Subsequently, snowball sampling allowed us to select 11 more faculty members for in-depth interviews. Researchers utilise snowball sampling to recruit study volunteers from people who share a research interest with the target population [62].

3.2. Subjects

As this research looks at the impact of COVID-19 on SAARC higher education online learning, we interviewed 7 academics from India, 6 academics from Bangladesh and 5 academics from Pakistan as sample representation. Such a sample for single in-depth interview satisfies the complementary data requirement of the proposed qualitative study [63]. This process also facilitates data/-response comparability while enabling variability in sample representation to validate theoretical arguments proposed in this study.

3.3. Protocol for qualitative interview

Among various qualitative data collection techniques such as interviews, oral history, focus group interviews, Delphi group interviews, observation approaches [64], this study conducted in-depth interviews over the phone considering that it is a multi-country study and followed a set research protocol. The interview protocol was devised to explore faculty members' perceptions of the challenges associated with online learning during the pandemic, its advantages, limitations and recommendations. The protocol was piloted and pre-tested by conducting and recording two interviews before final in-depth interviews to ensure comprehensiveness and clarity of the questions. All interviews were recorded through 'Zoom'. Since the qualitative data were collected from qualified attendees, some were fluent in English, while others were semi-fluent and subsequently transcribed verbatim. The protocol was specifically trialled to allow the key respondents to tell their stories about the immediate impact of COVID-19, process of handling COVID-19 in tertiary institutions, to seek examples/practices, and often unearth issues that could be enhanced intuitively.

3.4. Qualitative interview questions

Contingency theory emphasises the need for proactive and reactive management strategies based on an organisation's unique circumstances and needs [17]. Typically, contingency theory is used when no theoretical framework has been established [65] and this uncertainty-based approach depends on the context rather than identifying a single best way to achieve stability [66]. The interview questionnaire was designed to investigate how SAARC HEIs applied contingency factors in their response to the COVID-19 pandemic by specifically considering the unique circumstances of the HEIs. Primarily, we asked open-ended questions to elicit information about the challenges that SAARC HEIs faced in responding to the pandemic, as well as the specific strategies they have undertaken to address the challenges.

Central to contingency factors are the issues of structure, design, people, technology, and strategy [25,67], so these enquiries naturally arise. The technology aspect is addressed in the issues surrounding COVID-19's effects and the challenges of using digital platforms. The strategic aspect is addressed by asking questions about the measures put into place by HEIs. Concerning the people element, we enquire about how individuals reflected on their own performance. Finally, the design and structural aspect is addressed by the enquiry into the challenges and effects of COVID-19 and sustainability of online education. The interview questions reflect an understanding of the basic factors of contingency theory and their applicability to the challenges now confronting universities and the higher education sector. The pattern of the question enables us to identify how various contingency factors dominate the operations of HEIs. Consequently, the questionnaire should generate important insights into the utility of contingency theory as a framework for guiding management decisions during times of crisis.

Some sample questions asked during the interviews are as follows:

1. How would you describe the immediate impact of COVID-19 on your university?
2. How would you explain the effect of COVID-19 on the higher education sector in general?
3. Explain the challenges you have encountered while trying to utilise the digital platforms for teaching.
4. What are the measures and strategies taken by universities to address the situation?
5. How well have the strategies worked for your institutions?
6. How well do you feel you are performing in this different teaching and learning environment?
7. In the future, do you feel that online learning is a viable option for your institution and higher education sector in general?

3.5. Qualitative data analysis

To represent a link between data and theoretical statements, this study strives to use the paradigm where qualitative data were collected to test theoretical arguments/links facilitating analysis through the comparative method [68]. Each interviewed academic was termed a unit of respondent or a single case, allowing cross-case analysis for comparison and contrast between cases [69]. For ease of investigating field data on teaching and learning via online platforms in SAARC countries via cross-case analysis [69], data was coded into categories to compare cases so that the properties of each category could be explored [70]. The integration of categories and their properties with respect to different themes was done, enabling comparison, discussion and interpretation of the contingent and non-contingent infrastructural phenomena [69,71] during COVID-19 in the SAARC countries. All respondents were coded (as shown in Table 2, R_1 to R_6) based on the nature of the tertiary institutions.

3.6. Qualitative depth interview profile

18 cases were identified from two university categories, at least two from each category code (i.e., two private and two public universities). All interviews either were recorded or noted and written into the protocol sheet. Each in-depth interview took around 30–45 min. For clarity of classification, cases are categorised according to their category classification code as shown in Table 2.

Each case is briefly discussed in the following section to provide an overview of background information and affiliations with the academic institutions.

3.7. Brief case background and discussion

As summarised in Table 2, category codes R1 and R2 represent Indian public and private university respondents, categories R3 and R4 represent Bangladeshi public and private university respondents and R5 and R6 represent Pakistani public and private university respondents. The interviewed Cases In1 to In7 are affiliated with codes R1 and R2. Cases IN1, IN2, IN3 & IN4, represent the opinions of the faculty members of Indian public universities while IN5, IN6 & IN7 denote private universities' faculty staff members' opinions regarding online teaching flatforms and structures during COVID-19. The interviewed Cases B1 to B6 are affiliated with codes R3 and R4. Cases B1, B2 and B3 stand for Bangladeshi private universities, whereas B4, B5 and B6 represent opinions of the faculty members working in private sector institutions. The interviewed Cases P1 to P5 are affiliated with codes R5 and R6. Cases P1, P2 and P3 represent Pakistani public universities whereas P4 and P5 represent faculty members from two private universities operating in that country.

The sample participants range in age from 28 to 68, with an average age of 43.5. There are ten men and eight women in the sample. The participants have varying levels of experience as lecturers, ranging from 2 years to 30 plus years. Participants also have varying levels of experience with technology, with some rating their experience as high, others as medium, and others as low. The sample includes lecturers, teaching assistants, department heads, and deans from a variety of HEI categories. Table 3 provides an overview of the demographic characteristics of the participants.

3.8. Ethical concerns

Ethical approval was acquired prior to data collection (UC Ethics # 9253). Written consent has been obtained from all participants and it was advised that taking part is completely voluntary and no identifying information will be included in published information.

4. Results

This section integrates the findings and cross-case views of the interviewed cases based on statements made by key informants on the points they stressed and affirmed. The integrated cross-case investigation made it possible to identify several contingency factors, which were then grouped as themes. Such an analysis provides a strong basis for understanding the key issues involved.

4.1. Overview of interview findings

We have applied selective coding techniques to seek patterns in the concepts and specify relationships between them, resulting in 20 sub-themes. Subsequently, these sub-themes were interpreted and compared with the extant literature. Revealed here were six emerging themes that could explain the challenges encountered by the academic communities in subcontinent universities during COVID-19: facilitating conditions, technology readiness, learning experience, mental health, and performance improvement. The key themes and sub-themes are summarised in Table 4.

Table 4 shows the identified sets of contingency factors that are appropriate to the context of the phenomenon being explored. The various factors are now discussed in an effort to integrate the recognised themes with the conceptual framework, particularly with the key theoretical contingency factors of design, structure, people, technology, and strategy, and how the dimension of effectiveness is affected.

4.1.1. Facilitating conditions

This first theme - Facilitating Conditions - highlights the importance of structure as a crucial contingency factor, given the profound

Table 2
Categorisation of cases.

Category Code	Category Description	Case Identification Code
R_1	Representatives from Indian public universities	IN1, IN2, IN3, IN4
R_2	Representatives from Indian private universities	IN5, IN6, IN7
R_3	Representatives from Bangladeshi public universities	B1, B2, B3
R_4	Representatives from Bangladeshi private universities	B4, B5, B6
R_5	Representatives from Pakistani public universities	P1, P2, P3
R_6	Representatives from Pakistani private universities	P4, P5

Table 3
Demographic factors.

Demographic	Factors	Number of Participants	Percentage of Participants
Gender	Male	10	56%
	Female	8	44%
Age	28–39	4	22%
	40–49	7	39%
	50–59	4	22%
	60 Plus	3	17%
Academic experience	2–9	4	22%
	10–19	7	39%
	20–29	5	28%
	30 Plus	2	11%
Technology Experience	High	5	28%
	Medium	8	44%
	Low	5	28%
Position	Lecturer	9	50%
	Teaching Assistant	2	11%
	Head of the department	4	22%
	Dean	3	17%
Institution Category	Public	10	56%
	Private	8	44%

Table 4
Themes and sub-themes.

Themes and Sub-Themes	Contingency Dimension	Frequency
Facilitating Conditions	Structural aspect	**18**
• Lack of contingency plan		7
• Infrastructure		5
• Digital divide		4
• Financial divide		2
Technology Readiness	Technology aspect	**16**
• Self-efficacy		7
• Access to online technologies		5
• Hands-on training		4
Learning Experience	Design aspect	**15**
• Teaching quality		6
• Student satisfaction		5
• Poor teaching quality		2
• Poor learning outcome		**2**
Mental Health	People aspect	**14**
• Anxiety		5
• Negative emotions		5
• Loneliness		2
• Lack of interaction with colleagues and researchers		2
Sustainability	Strategy Aspect	**7**
• Long-term prospects		4
• Discipline-specific delivery		3
Performance Issues	Strategy aspect	**9**
• Mindset adjustment		4
• Lack of training development		3
• Poor research output		2

impact of COVID-19 on the tertiary education sector of SAARC countries. “Deeply embedded in the contingency literature is the construct of congruency, or fit” [23]; in other words, does the structure fit the organisation’s level of contingency factors? The participants identified issues such as lack of contingency planning, access to technology, digital divide and financial divide affected their ability carry out teaching-related activities. Understandably, universities did have not any contingency plan in place to react to an unprecedented situation such as COVID-19. The lack of planning meant that resources were stretched and simply inadequate to support academic staff and students. In other words, structure misfits the contingencies both with respect to its physical and functional aspects [72]. For example, respondent IN1 commented:

> “The entire education sector was affected by Covid-19 and not just the tertiary education sector. First, we had no preparation, no contingency plan, nothing in both private and public sector universities. After three months or so, most of the public and some

private universities gradually tried to move to online, but that initiative was problematic because there was no infrastructure present for online education".

B3 echoed a similar sentiment and voiced concerns about the lack of planning and infrastructure:

> "Most of the public universities initiated to move online but the University Grants Commission (UGC) forced all public universities not to take any online exam. Because there is no infrastructure to take online exam or home exam. It's been a year without any exam whatsoever, but many students already finished their semester. Due to the lack of interactive classes and online exams, students' interest and attention has declined. I have noticed that in recent times, students and teachers have lost their interest in online learning mechanisms".

Another important sub-theme is digital divide, which is a global issue and disproportionately affecting the higher education sector. A large number of students are currently struggling in higher education due to the lack of access to necessary technologies required to access online learning. For example, a study of 833 university students in India revealed that access to digital devices such as desktops and tablets is lower among students from lower income groups, and 86.91% of students rely on smart devices for internet connectivity. This may not be conducive for effective online learning [7]. With reference to digital divide, B2 and P3 stated the following, respectively:

> "I have noticed a big divide between the universities and students staying in the city and in the rural area. I have students from remote areas and villages and the ones who left the cities are highly disadvantaged and struggling due to lack of connectivity. It was sad to see the extent of digital of divide ….. Students from remote area are far behind in terms of accessing the techno-based infrastructure as they don't have access to necessary devices. It is also difficult to learn through a SMART phone. But not many of them can afford a laptop and there is not much I can do to help them."

> "We always had problems between the disparities of facilities between public and private universities in Pakistan and the pandemic has increased these differences and disparities. As a public university lecturer, we hardly get any support, whereas I see that my friends in private universities received laptops, headphones and a variety of technical support for online delivery. Whereas we are left in the dark. We hardly received any communication from the higher authorities regarding their future plans. I guess they were also unsure and did not know what to do".

Financial divide is another important theme that emerged during the interviews. A recent study by Roshid, Sultana [73] reported several significant gaps in equal opportunities between students and teachers concerning facilitating conditions such as: technology access, internet connectivity in all locations, financial ability, and the overall education environment at home. For example, respondent B5 remarked:

> "The overall situation is problematic. Students who belong to well-to-do families can afford what is required to access online learning, but not the students coming from lower middle and poor families. I have had students crying over the phone and said to me that they can't afford to buy a laptop or a tablet at this stage as their parents lost their jobs due to lockdown".

4.1.2. Technology readiness

Another important contingency factor is application information and communication technology [67]. Technology remains an integral aspect of the structural contingency literature [25]. Our findings indicate that the interaction between students and teachers is mediated by technology, and it can wield considerable influence on learning outcomes [74,75]. As the universities changed from traditional face-to-face instruction to an online learning environment within a short period of time, it exposed teachers and students who lacked confidence in modern technology. For example, according to IN6:

> "*Personally, I was comfortable with the online teaching mechanism, but most of our faculty members are not equipped to manage and handle online teaching, especially the senior academics. We have seen how much they have struggled to carry out regular teaching activities and they needed lot of support which was not available at that point of time*".

It is clear that a number of academics require extensive training and assistance for effective usage of online learning platforms. Findings strongly suggest that many academics were not quite confident and lacked self-efficacy to carry out instructions effectively using an online platform. For example, P2 stated that:

> "*We did not receive adequate training to conduct online classes over Zoom. I found it extremely difficult to engage students. In the end, I used a camera to project my drawing board which made life a little bit easier for my students. But it took me a long-time figure this out. Formal training would have made our life much easier, but the lack of systematic process meant that we were left to do whatever we can …*".

Thus, in an academic context, participants were forced to suddenly work remotely, being exposed to technology with which they were not familiar but still had to use. Consequently, technological uncertainty created an environment of turbulence, which greatly interfered with the HEIs' organisational structure and resulted in a dysfunctional attempt to achieve desired outcomes.

4.1.3. Online learning experience

Another important theme that emerged from the interviews is the effectiveness of online learning experience which also point towards design issues in the contingency theory. Organisational units can effectively coordinate and control technical tasks and

internal activities by using a systematic approach to aligning processes, leadership, culture, and people [24]. However, our findings indicate that the structural design of the HEIs was not flexible enough to respond effectively to rapidly changing circumstances. For example, most academics voiced their concerns regarding the poor quality of learning experience which included poor outcomes and teaching quality, and poor student satisfaction. For example, according to IN7:

> "The online mode is not an alternative to face-to-face education system. Our science students are struggling more than social science students and we have no idea what to do about this. Looks like our authorities have no idea".

Even the private sector universities, which are usually equipped with better infrastructure also struggle with student satisfaction and retention. As I6 and B5 respectively commented:

> "In our university, the students' drop-out ratio increased due to their non-willingness to take on online education (I6)".

> "I see a lot of our students are dropping a semester. This is a worrying sign (B5)".

This is an interesting finding and contrary to the widespread perception that private university students are likely to experience better learning conditions. It is based on the belief that they can afford higher expenses associated with required amenities [76]. Thus, it is apparent that SAARC HEIs need to rethink how they have been designed and structured, and put more emphasis on aligning the people, processes and technology to provide a better learning experience for the students.

4.1.4. Mental health

A well-established characteristic of online learning is the absence of physical interaction among learners and teachers, which effectively leads to lack of social relatedness that is regarded as vital for academic success [77]. With confirmation that relatedness helps psychological well-being [78,79], extant research revealed the emotional reactions of university students during the pandemic. Students experienced higher levels of psychological distress and anxiety [80] and their online learning experiences were characterised by highly stressful learning environments and challenging academic demands [81]. On the other side of the spectrum, faculty members experienced mental health issues and found it extremely difficult to cope with extremely unfamiliar and demanding conditions. During the interviews, faculty members reported feelings of anxiety and negative emotions which greatly undermined their ability to carry out their regular teaching activities. For example, according to P1:

> "I struggled to engage my students as a teacher. No training, counselling, or support—we were thrown in. It affected me. Self-training on YouTube and my students helped me cope with this dramatic event. But internet teaching still scares me".

Even the private university academics also felt the brunt of the situation and experienced negative emotions. B6 stated:

> "It is a strange situation. There are a lot of negativities out there. Some of my colleagues are thinking about changing their professions as they are not sure how long these stop-gap measures will continue. Something needs to be done to keep up the morale of academic and administration staff".

The findings also raise an important question. Although faculty members are expected to carry out their duties diligently under severe resources constraints and motivate students, it appears that not enough attention has been paid to the plight of faculty members who are also experiencing similar issues in terms of mental health. It is observed that people found themselves been positioned as products of a complex system which is shaped by a variety of issues, including other individuals and organisations, where different people can act differently or be effective in a variety of situations. Thus, our results inform us that when viewed through the prism of contingency theory, the interactions of the key ingredients of an HEI system, namely (i) structure, (ii) technology, and (iii) people, especially so when aligned with functions undertaken, have not been healthy. Thus, pointing towards a bleak future prospect for online learning in the SAARC region.

4.1.5. Sustainability

Another critical theme emerging from the interviews is sustainability which is relevant to the strategy aspect of contingency theory. Indeed, strategic changes in organisational processes and business activity coordination greatly rely on the context of the environment in which these organisations operate [24]. In terms of the longevity of online learning phenomena, findings indicated some divided perceptions. While most faculty members felt that online learning will coexist with mainstream education, a few others were more cynical about the sustainability of this method. For example,

> "I do not think online education is going to work in the long run. Maintaining the connectivity could be only an ad-hoc solution. Online education should not be an alternative to face-to-face as there are way too many barriers ….to run online education effectively" (IN2).

> "I don't see how it is sustainable in the rural parts of our country. We can argue that private universities are better positioned to make online teaching as part of their process, but for public universities in our part of the country, it will not work. If unless the government initiates a massive digital transformation in the education sector. But I don't see this happening in the near future (B1)".

However, some participants had a more a positive outlook and predicted that online learning will continue to thrive in this part of the world:

> "I think online education can co-exist with mainstream education. One of the biggest advantages is reusability. I have recorded my lectures and I can re-use them again. It offers me that added flexibility. Then again, students also miss the face-to-face interaction. I think a blended approach will work in certain situations (P4)".

> "There are some fields of study that cannot be effectively taught online, especially those requiring practice, specialized tools and close supervision of the staff member, the higher education authorities should focus on such units and may arrange a semi-physical learning environment with many necessary precautions in place (P5)".

Our findings appear to suggest that the HEIs within the sampled SAARC region have not reached a unified strategic thinking where contingency factors can tie in strategy along with the other contemporary factors of the systems.

4.1.6. Performance issues

Contingency theory asserts that a key dimension of performance is effectiveness, which mainly denotes successful adaptation with the environment [16]. Our findings highlight an important theme concerning performance-related issues experienced by faculty members. Interviews reveal two emerging subthemes here. First, it is apparent that faculty members needed to change their mindset to develop a positive attitude towards online teaching methods and adapt to the new evolving environment. Most faculty members indicated they tried to maintain a positive mindset and keep themselves motivated throughout the entire period. For example, IN3 and P3 respectively commented:

> "It is not very easy but yes, both the staff and students are trying their best to change their mindset for the new forums of education, examination and other academic training. Moreover, this is an area we need improve ourselves even after COVID-19 as online teaching and learning is here to stay and we need to learn quickly (IN3)".

> "There is a lot to do to reach a satisfactory performance in online education. Many changes in our mind set, attitude, and behaviour are to be made to successfully manage the serious problem in education brought by pandemic (P3)".

Another important issue emerging is the need for more training. Academic staff voiced their dissatisfaction with current mechanisms that are in place to foster and improve their skills and knowledge in the domain of online learning. For example, B4 stated:

> "I have never attended any meeting in an online setting. And all of a sudden, our management asked me to teach online with my laptop or mobile device. This is simply not acceptable. We need advanced training in online teaching".

Thus, education institutions in SAARC countries need to consider online learning as part of their broader strategy. While most of the issues surrounding online learning are a result of forced implementation without necessary preparation [82], tertiary institutions can learn from them and develop appropriate strategies for developing and updating technology-related skills. In this way, organisational changes become efficient and/or better solutions would emerge and spread [83].

5. Discussion of findings

We examined the tale of online learning during COVID-19 in the SAARC region through multi-layered themes. Given divergent perspectives and emphases, the aim is to synthesise the recognised themes into useful conceptual ideas, description, and prediction. Accordingly, the findings of our study highlight the issues of digital readiness and competence of HEIs for online study in the future. While differences in digital infrastructure readiness and teaching competencies among HEIs may have existed in the SAARC countries, a common theme is that education leaders and policymakers are being pushed to find out how to generate large-scale engagement where equitable e-learning solutions can be implemented.

The reality is that the epidemic has altered the centuries-old, chalk-talk teaching approach into one that is driven by technology. Our study indicates significant challenges in delivering a high-quality education experience for students throughout the SAARC region. Faculty members have reported the absence of necessary conditions such as a lack of technological infrastructure and accessibility measures hindering the effectiveness of online teaching and learning. As a result, most university lecturers and instructors found it challenging to teach online due to the lack of required equipment.

Technology readiness and absence of quality learning experience were noted in the interviews. According to the faculty members, they did not have necessary training and institutional support to engage students and provide a good learning experience. Our findings are consistent with an interpretative phenomenological analysis (IPA) conducted among teachers working in government and private universities of Uttarakhand, India. This IPA revealed a lack of basic infrastructure facilities, technical support, training, institutional support such as a proper budget to purchase digital technologies, and lack of clarity and direction, undermining effective online teaching [84].

Another big challenge in this region are the socio-economic and infrastructural disparities that hinder development of a digital mentality. As such, lack of reach of technological infrastructure to every part of the country contributes immensely to the digital divide. For the region to make progress, there is a pressing need to close the achievement gap that exists between urban and rural students. An important aspect that our study brings to focus about online learning, primarily relating to learning from home alone, is about one's own mental health both with respect to faculty members and students. As all sections of the education society felt anxious and depressed because of the pandemic's uncertainty, for the HEIs an entirely new perspective on mental health and psychological well-being has opened up.

Both university administrators and government officials need to take due cognisance of mental health factors to improve their

programs. With online learning being considered as a medium of education for the future, our study seeks to throw more light on these challenging times, especially so for the SAARC nations. For educators, lack of familiarity and/or ability with the new mode of education delivery, lack of adequate technological infrastructure and mental stress of uncertainty create performance issues. Our findings can provide universities and government agencies with more ways to guarantee that students have the essential abilities to be competitive in the post-COVID-19 world. So to create a viable and sustainable online education system, for SAARC countries the COVID-19 pandemic is a wake-up call wherein there is a need to accelerate investment in digital infrastructure in the HEIs. Policymakers should give proper consideration in trying to improve the conditions so that both academics and students do not find themselves on the wrong side of the digital divide. We have highlighted six themes reflecting online learning during COVID-19 at the HEIs of the SAARC region, mainly through the contingency lens.

From the contingency theory perspective, our findings point to the fact that HEIs simply lacked the ability to adjust online education during COVID-19, characterised by confusion and disorder. From the responses grouped under sustainability theme, it is noted that a section of educators remains sceptical about the long-term prospects of online distance learning. We reported mixed reactions concerning the sustainability of the current online teaching methods and tools in the post-COVID-19 world. Most faculty members (10 out of 18) felt that it is unsustainable given the state of the infrastructure and socio-economic realities in their respective countries. Nonetheless, a few faculty members expressed that online education would continue to thrive and government and university authorities should undertake necessary actions to facilitate the transformation. Accordingly, this study illustrates there is a lack of coherence among the various themes that underpin the success of the digital education environment. In this context, an important subtheme evident in the interviews is that of mind-set adjustment. With reference to long-term success of this newfound method of delivering education, opinions were somewhat mixed.

The COVID-19 pandemic has changed the world, suggesting that the earlier teaching method of face-to-face teaching and learning and socialising in HEI campuses needs to exist along with virtual classes. We therefore believe that our study is timely in reminding policymakers of digital platforms as a way to make progress in their respective SAARC countries.

6. Implications and recommendations

6.1. Theoretical implications

The goal of this paper was to explore how SAARC HEIs have responded to the contingency factors that arose during the COVID-19 pandemic. The analysis was executed through the prism of contingency theory, which postulates that performance is a consequence of the fit between various contingency factors [16]. Our paper contributes to the theory by exploring an important organisational phenomenon, namely how HEIs in the SAARC region acted and reacted to the pandemic. When the broad six themes that emerged are examined through the exploratory power of contingency theory, we delineated the higher education environment as a complex repository of contingency factors that materialised during the pandemic. In discussing the contingency theory view, themes were matched with areas of structure, design, technology, people, strategy and performance. The SAARC universities found themselves unprepared for contingency measures, so consequently they could not effectively respond to dramatic changes in the external environment. When viewed through the contingency theory of management principles [29,85], we witness the significant role of contextual variables in the effective management of institutional activities. Subsequently, our study emphasises the usefulness of contingency theory even when assessing a hyper-dynamic context. The theoretical logic of our study asserts that SAARC universities need to devise internal competencies and resources to better prepare them against complex environmental changes and challenges.

6.2. Practical implications

From a practical standpoint, this study highlights some important challenges faced by faculty members in the SAARC countries. While extant research primarily focused on the responses and dilemmas faced by students, this analysis unearths some critical evidence from the other side of the spectrum: faculty members. Most important is the need for a shift in the mindset of faculty members so that a healthy e-environment with the HEIs can develop. This would lift the SAARC universities to an ideal position, or at least a better one, to better respond to the environmental changes. In addition, the themes identified in this study can provide insights for university administrations, government agencies, and other relevant authorities to ensure thorough implementation of online learning mechanisms in the wake of COVID-19 or a similar outbreak in the future.

It is evident from the findings under six broad themes that just raising the quality of online platform services is not sufficient to increase the utility of online teaching and learning platforms in the SAARC region. While public universities are subsidised by national governments and therefore are either not concerned or nimble footed enough to respond to external contingencies which private HEIs can generally do, the strategic and financial ramifications of students' participation (or lack thereof) and quality education need to be understood. This is because they are the primary stakeholders in online learning processes and must find and fund their own strategies. From a crisis management and contingency perspective, none of the public institutions and most private universities in all three nations had a back-up plan or institutional assistance to deal with the COVID-19 issue.

Our findings strongly reveal that additional investment is needed to address the issue of online platform access. The postsecondary education sector must also play a more re-/inventive role in managing these unique crisis situations if it is to make any headway. A policy rethinking of how Pakistan, Bangladesh, and India's HEIs should operate in the future is necessary because of the pandemic's socio-economic destructive effect on their institutions. Managing a crisis requires new strategic goals, plans, and activities that need to be implemented. Public awareness campaigns aimed at raising understanding of the importance of virtual learning environments

should be implemented by education authorities, the media and academics on a national scale. It is possible to cultivate an attitude of trying out new hybrid technologies in conjunction with traditional classroom instruction, to build and implement a cloud-based learning environment that includes virtual classrooms, virtual content, virtual teachers, virtual students, and virtual dashboards. Possible new online undergraduate and postgraduate programs could be created [86]. Students' attitudes to development, the university's image, and its financial status will all improve if efforts are made to enhance and maintain the quality of e-learning [43,47]. For an online teaching and management system to be effective and efficient, it is critical to get input from students, particularly those in underdeveloped nations [87]. Students' e-word of mouth may be required by university staff to ensure that they are providing valuable and meaningful online education. A university's brand image or form of public relations can be enhanced by the word-of-mouth of its students during a pandemic [47]. Helping students learn ethical principles and behaviours in an online learning environment is crucial, but so is providing them with meaningful and timely feedback [88]. Digital transformation in higher education means implementing a three-pronged approach: firstly, the physical space and equipment (such as large theatres and laptops); secondly, the people (staff, high-tech teams and students); and thirdly, practice (technology-based training, teaching, learning, counselling, and system). Higher education leaders and institutions may increasingly consider digital learning to be at the core of teaching, but there is still a need to strike a balance between physical and virtual modes of learning [88].

On the whole, when viewed through the contingency prism, HEIs were found to be lacking in their ability to align the notions of external and internal fit. As a lesson for the future, the reactive strategies that HEIs were forced to adopt can be improved upon to design more effective proactive strategies, such as the adoption of emerging technologies, industry collaboration and investment in learning infrastructure and facilities. Importantly, HEIs and respective national governments should be devoting time and resources on how mental health issues, both for the faculty members and students, can be addressed. A way forward can be an open consultative session between faculty members, students and the management where ideas can be brainstormed to arrive at a consensus approach with respect to each institution's socio-cultural background and the environment in which it operates. To kick-start this idea, special sessions can be organised where faculty members from psychology or social science departments can be entrusted with the task to understand anxiety and loneliness issues experienced by students and faculty staff. Such an approach can be useful in creating a healthy and conducive environment at the HEIs.

7. Limitations of this study and future research

This study has some inherent limitations. The questionnaire was developed to explore the challenges faced by faculty members in Bangladesh, Pakistan and India. Faculty members shared their perceptions and lived experiences regarding online learning mechanisms. However, perceptions of the faculty members were heavily influenced by negative experiences they encountered during their interactions with online learning technologies. A longitudinal study would add more value to this as it will assist us to know more about their experiences over time and see if their perceptions change in post-COVID-19 times. Adaptation, as a construct of performance, takes place over time [23], and therefore a longitudinal study will be useful in revealing the level of adaptation changes as HEIs adopt new strategies and structures in their attempt to fit in to the new environment. In terms of generalisability, this finding is limited to the perception of a very restricted number of faculty members from different public and private universities in India, Pakistan and Bangladesh. Perspectives of faculty members from rural parts of India, Pakistan and Bangladesh are likely to yield different insights. Finally, a bigger sample size and a combination of qualitative and quantitative research methods are both recommended for future analyses.

8. Conclusion

The conclusions in the paper are based on the application of the key ideas of the contingency theory and from analysis of the interview discussions. Synthesising these findings, we can argue that developing nations like India, Pakistan, and Bangladesh face enormous challenges as a result of their rapid digital transition. To prepare for the worst-case scenario, they need to make substantial investments in large-scale technological infrastructure and faculty training on distance education. HEIs can use the experience so that they can devise specific online courses, provide opportunities to matured-aged and rural students and even physically challenged who can benefit from the good facilities that an education institution should have. If certain mental health programs are started, it will have a long-term beneficial effect on the reputation of the HEIs. As COVID-19 has been a primary priority in many countries' national budgets and economic strategies, if the same importance is accorded to postsecondary education in SAARC countries, it will contribute to the healthy growth of the HEIs. The transition from traditional to digital and virtual education has not been seamless and not expected to be, especially in underdeveloped nations [89].

The SAARC nations need to work together strategically to prepare a contingency plan for digital learning for future circumstances in mind. The administration and management of e-education systems, software development for digital education, staff training for e-teaching, having enough internet provision, and technical infrastructure are problems that are shared by the SAARC member nations. Governments of the SAARC countries must discuss how their postsecondary institutions are addressing the long-term, complex issues that the epidemic has highlighted or exposed. Future strategies should set up a platform to ensure the simple, regular, and beneficial exchange of information between SAARC states regarding the development of curricula, provision of less expensive online learning modules, students' access to e-education, and improved techniques for online testing.

Author contribution statement

M Abu Saleh: Conceived and designed the experiments; Performed the experiments; Contributed reagents, materials, analysis tools or data; Wrote the paper.

Md Irfanuzzaman Khan: Analyzed and interpreted the data; Contributed reagents, materials, analysis tools or data; Wrote the paper.

Shantanu Banerjee: Contributed reagents, materials, analysis tools or data; Wrote the paper.

Farzana Safi: Performed the experiments; Contributed reagents, materials, analysis tools or data.

Data availability statement

Data will be made available on request.

Additional information

No additional information is available for this paper.

Research Ethics

It was stated that the respondents' participation in this research was voluntary, but their interview agreement has been considered their consent to participate in the study. This research project (project ID: 9253) has been approved by the University of Canberra "Research Ethics & Integrity" committee. If you have any concerns about the ethical conduct of this project, please contact the Research Ethics & Integrity team at HumanEthicsCommittee@canberra.edu.au.

Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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