

Chapter 4

Challenges, Recovery Strategies and Solutions to the Covid-19 Pandemic in Universities: An Exploratory Literature Review



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Abstract University systems, structures, and processes have been caught off guard by the unprecedented impacts of the Covid-19 pandemic, with almost all institutions lacking proactive contingency plans. In much of the world, most stakeholders, including consumers, are ill-prepared in technology, with academics and students having serious gaps in digital technology knowledge, mainly in poor and developing countries. In addition, funding uncertainties, inadequate technological infrastructure, intellectual lack of digital capability, and inflexible policies exacerbated the consequences of the pandemic. This has had adverse repercussions on the quality of teaching and learning. This book chapter critically synthesises the existing literature on the current strategies to recover from the pandemic, discusses the challenges encountered, and considers the new dimensions that have emerged from the empirical literature in the university sector (which can be applied in different settings). These objectives were achieved by rigorously analysing various relevant, recently published journal articles and three official reports from credible international organisations. The literature review study was based on grounded theory's inductive approach, leading to the search for relevant articles and official reports. It is believed that the dissection and absorption of several realities challenges and solutions identified in the book chapter can be utilised as foundations of recovery strategies that can be planned and implemented at universities around the world.

Keywords Covid-19 pandemic · Contingency plans · Document analysis · Digital tools · Policies · Recovery

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1 Introduction

Across the globe, the transitioning higher education sector was caught off guard by the Covid-19 pandemic. This has created severe uncertainty and has forced internal stakeholders (students, employees, parents, and prospective employers) to find strategies to adapt to the ‘new-normal’. The radical re-engineering of systems and structures required the mode of delivery to change through innovation. Although the pandemic has created new and unprecedented challenges, universities applied digital tools in their operations and learning and teaching in most cases without changing their policies, curricula, and content.

The fast onset and unprecedented disaster of Covid-19 created havoc and caused system paralysis in universities. This has adversely affected the communication channels among internal and external stakeholders, primarily in silos pre the pandemic. A rigorous literature review synthesis of journal articles and authentic reports has led to an analysis. This has enabled us to determine the common challenges in the university sector across the globe and explore strategies on the path to recovery that can be applied in universities throughout the tertiary education sector. These realities are the heart of the present chapter that seeks to research, analyse, and dissect the challenges, recovery strategies, and solutions to the Covid-19 pandemic in universities. They have shed empirical light to key issues such as the realities and levels of universities’ assessment of their status and transformation during the Covid-19 period and their efforts in the process of transforming their organisation; existing policy response strategies in universities during the pandemic; comparisons and mapping in terms of responses of coordination between public universities and governments and their responses; assessments of policy response implications of future recovery plans for similar pandemics; assessment of the Covid-19 implications, and strategies that could be implemented in this transforming sector, trends, and models identification in universities; experiences and predictions among academic staff members, examining the impact of the pandemic on their well-being; assessments of the legitimisation of online teaching and learning and whether Zoom fatigue has revealed its limitations and exploring service quality in universities, the current opportunities and challenges facing the university sector during the Covid-19 pandemic and in terms of difficulties sustaining academic programmes in Africa.

The structure of the chapter has taken two different angles as it can be seen combining the existence and dynamics of empirical research studies that can be considered basically ‘generic’ and others that deal with specific university realities, challenges, problems and relationships in a wide variety of country and societal contexts. The researchers’ choice of research dynamics and presentation is wide in topics and realities internationally and provides a substantial amount of more details of these studies, including their research methods, and opens the horizons of new knowledge in the challenging countries where the research was conducted and seeking answers associated with the questions associated with the challenges, solutions and recovery strategies at universities throughout the world during the Covid 19 pandemic.

Higher education institutions in developing countries are more vulnerable to any form of disaster (Muftahu, 2020), a reality that was evident in the early stages of the Covid-19 pandemic: Poor emergency responses were observed more readily in countries with weak and autocratic governments (Marinoni et al., 2020; Nixon et al., 2020). Herbst (2021: 1) argues that leaders in the university sector without maps navigate unfamiliar territory associated with the extreme demands and expectations placed on them. The response from universities to Covid-19 has been considered less proactive, which has been aggravated by the absence of disaster contingency plans (including preparedness). Numerous researchers consider this a systemic issue (Wigginton et al., 2020). In particular, the Covid-19 pandemic has been seen as destabilising African universities as they attempted to transform and improve their education systems and functions (International Association of Universities, 2020).

Consequently, Covid-19 has been perceived as having a significant impact on the foundation of the education ecosystem (Rieley, 2020). Meanwhile, Cuaton (2020) opines that the pandemic has significantly contributed to university changes, which have been regarded as a threat and an opportunity. Muftahu (2020) maintains that the Covid-19 pandemic has redefined universities' functions and operations and how they respond to the needs of students, academics and non-academic staff members.

Several scholars have insinuated that diverse yet interconnected adverse impacts and challenges exist. Covid-19 might have brought these about in the management sphere in developing appropriate actions and response initiatives (Nganga et al., 2020). Researchers have described funding uncertainties and budget cuts, which have been expected (Ferguson, 2020). Academic dilemmas concerning the mode of delivery (including using digital technology in learning and teaching, which might compromise quality) have been described as technology and learning opportunities (Camilleri, 2021; Flavell et al., 2019; Igoe & Chadwick, 2020; Smalley, 2020). According to Camilleri (2021), Covid-19 has influenced university leaders to employ digital and virtual technologies. This has continued delivering student-centred education, conducting and disseminating credible and impactful research, and community engagement/citizenship. Many researchers have cited various recovery strategies that could be used to move forward after the pandemic. These include technological advancements (Marinoni et al., 2020; Watermeyer et al., 2021), the innovative and creative monitoring of online examinations (Ashour et al., 2021) and the sharing and updating of information (Bender, 2020). This is in an effort to assist unskilled academic staff members in using digital tools (Coynne et al., 2020).

In addition, some researchers and thinkers have had reservations about whether universities have been prepared to embark on the digitalisation of learning and teaching processes (Crawford et al., 2020). University students have been using numerous benchmarks in order to evaluate service quality. This includes academic programmes, tuition fees, physical infrastructure, communication with both academic and non-academic employees, and institutional reputation (Ozkan & Koseler, 2009).

In Yemen, meanwhile, a multiplicity of challenges brought about by the Covid-19 pandemic has prevented higher education institutions from adapting to the new normal (Al-Baadani & Abbas, 2020). These authors cite many challenges and weaknesses that have worsened the university sector in Yemen. This includes difficulties coping with change, financial instability, academic career uncertainty, students' health, additional costs associated with transformation, and internet infrastructure and usage.

Scholars have explored various factors regarding the adverse impacts of Covid-19 on universities, which have been described as severe owing to the disaster striking during the global economic downturn (Alharbi, 2020). The absence of approved strategic plans (Al-Baadani & Abbas, 2020), agility, the organisational culture changing from face-to-face teaching to online learning (Zhaohui, 2020) and under-resourced institutions (in terms of the existence or utilisation of digital technologies and the internet) have been additional burdens to university responses and student capacity in interacting adequately in the online environment (Zhong, 2020). The goal of this study is to determine the challenges that are the impediments to recovering from Covid-19 in universities. It further sheds light on recommended best practices associated with recovery strategies and solutions resulting from the impacts of the pandemic. What follows is the search strategy, data capturing and analysis section, results, discussion and conclusion of the study.

2 Literature Review

The literature review study relied on grounded theory's inductive approach, leading to the search for relevant articles and official reports. This was followed by codifying, capturing and interpreting the findings (McCann & Polacsek, 2021). The researchers pinpointed many relevant journal articles and three official reports that revolved around the objectives of the integrative literature study. This was produced from 300 articles, 12 book chapters and eight conference proceedings. The keywords included were 'leadership', 'response and recovery' and 'Covid-19 pandemic in higher education'. This review study was theoretically grounded on empirical studies focusing on university governance during the Covid-19 pandemic. The official reports were extracted from the United Nations Educational, Scientific and Cultural Organization (UNESCO), PricewaterhouseCoopers (PwC) and the European Association for International Education (EAIE).

Numerous relevant articles from Google Scholar were included and published in 2020 and 2021. The research articles' themes, findings, conclusions and impacts are listed in Table 4.1.

Table 4.1 Summary of the selected literature

Scholars	Designs and methods	Sampling and setting of the study	Research objectives	Results	Conclusions and recommendations
[1] Muftahu (2021)	Systematic literature review	Secondary data analysis: Policy documents	An exploratory study on the identification of the matters arising from, and the implications of, the Covid-19 pandemic in terms of difficulties sustaining acexploratoryacademic programmes in Africa	The pandemic has changed universities by pushing them beyond their limit to be creative as they begin transitioning to online learning. This included training academic staff members on developing and using online learning materials and training students to fulfil their academic requirements through remote learning in response to the Covid-19 pandemic	There is a multiplicity of changes that African universities have had to face due to Covid-19. This includes the inability to provide technology, reduced accessibility of students (who lack resources), limited knowledge and skills in digital tools, and resistance to remote learning and teaching. Universities in developing countries (mainly in Africa) struggle to upgrade and implement digital capabilities to improve online learning. Contingency plans and mitigation strategies have been devised in African universities to respond to and recover from the impacts of the Covid-19 pandemic
[2] Camilleri (2021)	Systemic literature review Grounded theory	Academic and non-academic sources Journal articles Intergovernmental and non-governmental documents	To critically review the literature on service quality in universities and to investigate the current opportunities and challenges facing the university sector during the Covid-19 pandemic	University resources focus on students, stakeholder engagement, and high-impact research can be evaluated using different performance indicators and metrics	The following have been recommended: An investment in online digital technologies (infrastructure), conducive conditions and resources for universities to gain the trust of their stakeholders and lure both prolific students and academic members/researchers while simultaneously increasing quality and standards

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Scholars	Designs and methods	Sampling and setting of the study	Research objectives	Results	Conclusions and recommendations
[3] Ashour et al. (2021)	Qualitative	n = 28 Open-ended questionnaire United Arab Emirates universities	An assessment of whether the Covid-19 pandemic was behind the legitimisation of online teaching and learning and whether Zoom fatigue has revealed its limitations; experts specialising in university transformations' predictions and the vision of the university sector	Universities have expanded their digital learning and teaching capabilities due to the forced adoption of virtual teaching due to the pandemic	The acclimatisation of students, employees and universities to e-learning and investments made by universities in digital technology; sophisticated hybrid campuses forms have been forecast to be appropriate in the future; the new academic programmes should be incorporated into the Fourth Industrial Revolution (4IR), which requires programmes to evolve or combine in order to respond to work/employment demands
[4] McGaughey et al. (2021)	Quantitative	n = 370 Self-determined theory Australia	Experiences and predictions were tested among Australian academic staff members, examining the impact of the pandemic on their well-being	The pandemic brought about digital fatigue, work-related stress, adverse impacts of people's work-life balance and potential long-term changes; the country shows extreme reliance on international students, influenced by their neoliberal policy and quasi-market reform, which is profit-driven and which has jeopardised institutional solvency during the pandemic; there are 'silver links' with regards to the resilience of academic staff members; Covid-19 undermined the workforce's competency, autonomy and relatedness as well as its responses to it	University leaders should acknowledge the impact of the pandemic and its responses; there is an exaggeration by the government regarding the impacts of the pandemic due to their apathy towards sustaining the university workforce; the government's reliance on international students and its 'laissez-faire' approach need to be revisited through policy direction; working remotely has been positive for academic staff members as they have increased flexibility and have developed digital learning and teaching skills

<p>[5] Calonge et al. (2021)</p>	<p>An exploratory literature review study</p>	<p>Grounded theory</p>	<p>The research reviewed published studies on how universities communicated with their stakeholders during the Covid-19 pandemic</p>	<p>Very few universities had a disaster recovery plan, and the majority of them were not prepared to deal with a disaster of such magnitude; the use of media platforms such as social media as the mode of communication was considered to be as important as before the pandemic; to reach out to diverse audiences is regarded as just as difficult as before the pandemic; the accuracy of Time-Critical Information Accuracy is more pivotal as compared to pre-pandemic times; the involvement of crisis communication strategies for students was severe and more important than prior to the pandemic; consistency, empathy, trustworthiness and responsive reporting were more critical than before</p>	<p>The post-crisis communication strategy should be prioritised; universities should strategically plan when the disaster dissipates; knowledge sharing during the disaster should be promoted, especially regarding technological infrastructure communication and procedures</p>
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Scholars	Designs and methods	Sampling and setting of the study	Research objectives	Results	Conclusions and recommendations
[6] Teixeira and Mota (2020)	Qualitative	Literature review (using grey and white literature)	An assessment of the implications of the Covid-19 pandemic, strategies that can be implemented in this transforming sector, trends, and models identification in open universities in the EU	High-risk factors are associated with the brain drain on the leadership in research and innovation	The EU recognises a dire need to an emerging university landscape, the open universities of the EU should rebuild their identities to be centred on innovation, social agency and openness; an adoption of a personalised and caring pedagogical approach is essential; the institutional model which is aligned to its core values should be updated; a network-based collaborative environment should be open and an absolute knowledge digital ecosystem should be developed; resources should be shared, business processes mainstreamed and the outsourcing of services should be at the centre
[7] Green and McCann (2020)	Qualitative	Literature review Secondary data	An examination of a faculty model which came about as a result of the Covid-19 pandemic and which intertwines entrepreneurial principles with innovation and creativity at the centre, in order to suit the unprecedented changes in the university sector; an assessment is made of the strategic implications meant to aid the faculty, ensuring education programmes continue	Protecting the status quo is what is derailing universities from adapting to the 'new normal'; forward-thinking leadership is required during these tremendous changes brought about by the pandemic	It is important to make good decisions during this period when it is difficult to find sustainable answers; internal and external comprehensive data need to be analysed in the university sector; the previous data should be used to develop contingency and strategic plans

<p>[8] Satriawan (2021)</p>	<p>Qualitative</p>	<p>Literature review Open-ended interviews: provincial government and university employees of Lampung, Indonesia</p>	<p>An examination of the synergy between a provincial government and a university and how they responded to the Covid-19 pandemic in a community.</p>	<p>The synergy between the two sectors is good, as depicted, due to its mutual support and respect; the government's role is clear: that of a policymaker and facilitator; universities support government programmes through implementation</p>	<p>The provincial government takes a leading role in developing policies and community programmes and provides infrastructure and facilities to universities to implement programmes aimed at responding to the pandemic; the cooperation between the two sectors should recur so that response to the pandemic can be effective – this would have a positive impact on the recovery of the economic health and well-being of the community; policies and community programmes should be introduced and infrastructure and facilities provided to universities to implement the programmes aimed at responding to the pandemic</p>
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Scholars	Designs and methods	Sampling and setting of the study	Research objectives	Results	Conclusions and recommendations
[9] El Masri and Sabzalieva (2020)	Qualitative	n = 238 data points (public universities and provincial and national government) Secondary data Emergency management framework	Policy response strategies in universities were examined relating to when the pandemic unfolded; mapping and comparison were made on responses of coordination among public universities, the Ontario provincial government, and the Canadian federal government; an assessment was made on the policy response implications of future recovery plans for similar pandemics	When the UN declared Covid-19 a pandemic, universities took action, followed by the central government's responses; conversely, there were no announcements made by the provincial government although it is a constitutional mandate for education; there was a sudden pivot from face-to-face to the e-learning mode of education; there was indirect support from the federal government on mandates which fall under it; the Ontario government responded later to the mitigation phase by announcing a health data platform and funding for medical research; information was limited on new research initiatives and/or adaptations to the new ones; the federal government focused on economic advancements, student funding, job opportunities and retaining immigrants; universities were proactive in restricting academic mobility; there was no relationship or link between the federal and provincial governments; the Ontario government did not play a role in influencing universities' response to the pandemic and were invisible during the response and mitigation phases	The key stakeholders will play a significant role in the future recovery of universities; universities and governments should work and collaborate to rethink the mode of delivery and explore a meaningful and coherent education experience during times of uncertainties, turbulence and fragmentation; the actors need to learn how to manage difficulties that are challenging and unsolvable; policymakers need to rethink in practical terms; universities are capable of providing online learning –the future university model is blended with online learning; the application of e-learning will increase flexibility in course delivery and accessibility to under-represented groups and strengthen inter-institutional collaboration; the provincial government should collectively benchmark, develop and share best practice and revisit the university funding model by ensuring the mode of learning and teaching delivery is agile and provides fair access and support for students; internationalisation should be explored: The reinvention of international education by focusing on sustainable and reciprocal models; international relationships and partnerships can be leveraged through technology and building virtual research communities

<p>[10] Al-Maadeed and Marques (2020)</p>		<p>An assessment of the university sector status and transformation during the turbulent and unpredicted challenge posed by the Covid-19 pandemic; depicts how universities can resist and transform their organisation during a pandemic</p>	<p>The university sector can transform and resist the pandemic; it can achieve long-term sustainability post-recession; flexible policies and a leaner and more effective system can bring changes; universities' recovery efforts should reassess their purpose and the critical role they play in society</p>	<p>Universities play a major role in achieving and contributing decisively to numerous Sustainable Development Goals; the university sector's strategic direction should be focused on stakeholder responsibility principles and Environmental, Social and Governance (ESG); the governance dimension is essential in the sector if universities intend to achieve the Sustainable Development Goals; teaching pedagogies, policies and services should be modified to respond to the needs of stakeholders and the community; the effectiveness criteria to assess resources should be improved; technological development is required during 4IR to modify pedagogy; the preparation of students is needed in the industry sector through augmented virtual reality (AVR) and artificial intelligence (AI) in their learning and teaching practices</p>
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2.1 Digital Literacy and Its Implications in the University Business

Out of ten empirical studies published on university sector governance, innovation and recovery strategies during the Covid-19 pandemic, there are only four that have challenged and provided solutions in terms of the application of technology in teaching and learning and the business operations of universities (Ashour et al., 2021; Camilleri, 2021; McGaughey et al., 2021; Muftahu, 2020). For instance, Muftahu (2020) cited various challenges by African universities during the pandemic. Most of these are linked to access to technology by students, in addition to the low level of competence among the workforce in applying digital tools and employees' resistance to new technology. Moreover, developing digital skills to improve teaching and learning has been a major challenge. This is the reality, even though, as stated by one researcher, African universities have devised contingency plans including disaster mitigation, response and recovery to proactively deal with the impacts of the pandemic on learning and teaching (Muftahu, 2020). The conclusions from the latter researchers are also shared by Camilleri (2021), who has added that digital technologies in universities should be improved and developed in order to respond to the needs of key stakeholders (i.e. talented students and quality scholars) in order to increase the output and outcome quality and standards.

Interestingly, several scholars (Ashour et al., 2021; McGaughey et al., 2021) have applied different research methods in their empirical studies and added new insights and realities to the discourse. These researchers have highlighted that the pandemic has legitimised and increased universities' capabilities in implementing digital learning and teaching while also emphasising that new programmes should be aligned to 4IR. These scholars (Ashour et al., 2021; McGaughey et al., 2021) have also observed Zoom and workforce (digital) fatigue in countries such as the United Arab Emirates and Australia, which has led to stress and work-life imbalance. In Australia, McGaughey et al. (2021) have suggested that the government should respond to the workforce's well-being, change its profit-driven stance (relying on international students), change its policy direction and develop digital skills for learning and teaching.

Meanwhile, Calonge et al. (2021) have provided new insights and realities on how universities communicated with various stakeholders during the pandemic – something previous scholars have not dissected in the university sector. These authors have discovered disturbing governance pitfalls, with most universities being ill-prepared to face such disasters. This was confirmed by an absence of disaster recovery plans in the universities concerned. Calonge et al. (2021) have further concluded that universities should devise post-crisis communication strategies and promote knowledge sharing supported by technological infrastructure. In addition, social media was deemed an effective tool for communicating with students during the crisis.

2.2 Innovative Strategies and Digitally Driven Knowledge Transmission

Only two empirical studies out of 10 have been published on the strategies which can be harnessed due to the Covid-19 pandemic to transform the university sector (Green & McCann, 2020; Teixeira & Mota, 2020). These authors suggest that the faculty model – one that is entrepreneurial driven, has leaders who think creatively, and uses data to develop contingency plans – should be adopted. Teixeira and Mota (2020) contend that due to the unprecedented brain drain in academic leadership, universities should re-engineer their business operations to become ‘innovative centric’: sharing resources, increasing networks and ensuring that business processes operate smoothly. Immediately after the Covid-19 expansion throughout the world and its adverse effects on education, UNESCO (2020) undertook comprehensive international empirical research. This covered various problems and challenges facing universities, primary and secondary education (concentrating on higher education) and vocational and technical education colleges and institutions (UNESCO, 2020). The findings led to solutions to the problems and challenges that universities face. This includes tactics and strategies for successful distance learning and ways to support academics, researchers and students at all levels. These strategies consist of ways to upgrade and significantly improve educational planning in respect of universities’ engagement with communities, upgrading curricula, improving processes (leading to the sustainability of quality results in the era of digital learning), and creating new paths of excellence in the management of assessment, monitoring and evaluation of examinations, and the development of assurance in the case of technical schools, colleges and distance higher education (UNESCO, 2020).

2.3 Sector Collaboration’s Response to the Pandemic

Among the empirical studies analysed, only two articles (Al-Maadeed & Marques, 2020; El Masri & Sabzalieva, 2020) focused on policy response and the form of change in the effort to deal with the effects of the pandemic in universities. In Canada, for instance, the provincial government, which is legally tasked with communicating with universities, was considered absent during the pandemic. El Masri and Sabzalieva (2020) have suggested that all stakeholders should play a leading role in the recovery of the future of universities. Some of the recommendations that have been advanced by various authors mentioned above include e-learning accessibility for the less fortunate, agile learning and teaching, flexible policies, modified pedagogies (to respond to stakeholders’ needs), technologically driven international partnerships and benchmarked best practices by policymakers.

The article confirmed that effective and innovative university leaders are inevitably instrumental in transforming these institutions. Nonetheless, university staff, development partners, the private sector, students, parents, communities,

policymakers and civil society organisations, among others, must be prepared to support and empower universities in order to effect transformational change and create more advanced, resilient, equitable and responsive systems for a better future (Education Development Trust, 2020).

3 Discussion

3.1 *Challenges Posed by the Pandemic*

Scholars have mentioned various challenges and realities as hampering the response to and recovery from the Covid-19 pandemic. This includes students' lack of access to technology, the extreme illiteracy rate in the academic workforce (El Masri & Sabzalieva, 2020; Muftahu, 2020), and digital fatigue (which has led to stress and work-life imbalance) (McGaughey et al., 2021) and the absence of disaster contingency plans (Calonge et al., 2021). The circumstances facing academics, students, university leaders and the world have led to challenges created at the terrains of all university-based duties and responsibilities – teaching and learning, new knowledge production and community engagement. Teaching and learning have necessarily been transformed into basic 'upskilling methods' associated with technologically based new directives and platforms, upgrading and occasionally reformulating 'higher administratively based responsibilities' (such as 'student upgraded assessment levels'). These realities and difficulties have been more challenging in universities worldwide, facing limited financial and technological resources (Molosankwe, 2020).

The empirical work of Powell (2020) dealt with the circumstances, realities and relations associated with attempts and challenges in shaping, planning and implementing a scientific teaching and learning relationship among students, academics and university leaders. It has been shown that in South Africa, Africa and globally, university academic staff who have all their lives taught students through contact have admitted to limited experience in existing training in pedagogical planning, design and implementation of online processes and structures (Powell, 2020).

Ndevu's article on the challenges faced by students and academics in South Africa's universities, especially during the first lockdown period of the pandemic, used a mixed research methodology in researching three South African tertiary institutions. This was primarily based on the qualitative paradigm, which empirically identified several important realities, concerns, challenges and problems related to the repercussions of Covid-19 and the processes, functions and structures of tertiary institutions at all levels (Ndevu, 2020).

The analysis began with the severe problems facing staff and students during the initial lockdown period: the effects of self-isolation, the restriction of movement and the sheer challenges of remote teaching. The concrete facts all universities in South Africa were exposed to during this initial period and beyond were revealed as

the leadership realised that remote learning and teaching was a future trajectory of uncertainty (Ndevu, 2020: 280). The previous article identifies the realities and challenges faced by groups of students belonging to the poor and lower-middle-class sections of the population. The 'digital divide' adverse effects were rooted in unstable internet connections and a lack of hardware, especially for students living in informal urban settlements or far away, poor communities and those living in rural or semi-rural areas (Ndevu, 2020: 282–283). There were different realities between students at universities of technology and those in comprehensive and traditional universities. An analysis revealed that the former face problems and challenges associated with finances, space and technological issues, including the quality and facilities of university residences. Such a reality has inevitably led to severe adverse effects on performance as these students are obliged to work in different environments. This tends to be characterised by limited space, a lack of learning data, and the perpetuity of connectivity problems. Inevitably, such problems have serious adverse effects on the academic staff at several levels: scholastic, intellectual, time and psychological (Ndevu, 2020: 284–285).

International literature on the subject has empirically pinpointed the fact that international leadership has faced perpetual challenges associated with the pandemic in various ways. This is in terms of administration and governance at all operational and institutional levels while knowing full well that their decisions seriously influence academics, students and their families, curricula, student and departmental budgets, and the university's future during and after Covid-19. The leaders are the key decision-makers and are expected to pave the way forward with the institution's management, staff, academics, students, stakeholders and role players (Dopson et al., 2019).

3.2 Response and Recovery Strategies to the Pandemic

Several solutions have been provided as response and recovery strategies to the pandemic, which include skills development in digital teaching and learning, infrastructure development (Calonge et al., 2021; Camilleri, 2021; Muftahu, 2020), the development of innovative and agile teaching and learning, and disaster contingency plans (El Masri & Sabzalieva, 2020; Green & McCann, 2020; Muftahu, 2020). Moreover, the well-being of the workforce and a policy change on international students in countries such as Australia (McGaughey et al., 2021) have emerged as themes in the recently synthesised literature. Meanwhile, empirical research has been conducted by the internationally based and highly respected non-governmental organisation Education Development Trust. This study was based on a series of webinars among university leaders and other social participants, including academics and students from universities worldwide. It has shown that the essential element for the path forward for a recovery strategy after Covid-19 in terms of university innovation is harnessing new forms of collaboration (Education Development Trust, 2020). Such a step, it is believed, is based on the synergy,

cooperation and coordination of planned activities among university leaders, academics, students, civil society and the broader communities. Such a united alliance is the foundation for enabling holistic approaches to education reforms, enhanced continuity and continuous improvement. The examples of the collective utilisation of standard university and high school digital and technological platforms in Argentina (the [Comunidad Atenea](#)) provided free use to over 10,000 educationists to share, thus creating an online community of practice during the crisis (Education Development Trust, 2020). Thousands of Malaysian educators also shared collectively online and in WhatsApp groups. This shows that university leaders worldwide can harness the effective use of technology and data. It was decided that the efficient use of data for decision-making was a fundamental way forward because it facilitates strategic decision-making on interrelated factors.

Consequently, it was said that countries must invest in and support the creation of robust data systems. Professional severe development of leaders – preparing them to be able to use them – is considered equally important. The fact that upgraded, data-driven, system-level leadership is essential for universities worldwide is based on many university leaders, especially in Africa, being able to address equity challenges at scale. These challenges demand the prioritisation of students and academics who need additional support during and beyond the crisis (Education Development Trust, 2020).

An internationally acknowledged organisation, the EAIE, in their 2020 major report on their functionality, international relationships and collaboration with universities throughout the world – upon which the entity’s policy, actions and strategy are based – indicated that the research had shown that universities globally had done their best in their efforts to guarantee the security and, above all, the well-being of all their staff, students and communities surrounding the institutions (EAIE, 2020). These efforts were complemented by the institution that wished the universities’ success to continue successfully, especially in teaching and learning processes. However, despite the optimism based on such an analysis, the research also identified some problems and situations that could lead to deadlocks on various issues. These aspects were associated with the need to create new structures, policies and processes, and the problematic allocation of resources that could ultimately lead to the negation of functionality (in terms of critical elements such as teaching-learning continuity, resulting in lower academic standards, among others). The empirical research undertaken pinpointed the significance of the following (EAIE, 2020):

- Planning and implementing the strengthening of relations.
- Ensuring continuous honest communication, support, and assistance to students.
- Providing insurance policies to foreign students.
- Conducting innovative planning in terms of the processes of teaching and learning, with exceptional care for existing infrastructure and strategies, such as administrative staff operating remotely or moving towards distance/remote teaching and learning, or video conferencing.
- Establishing needed support for new students.

- Ensuring the community is kept informed regarding the latest information about Covid-19, such as providing up-to-date scientific information, the suspension of classes, and new strategies, plans and implantation particulars.

Because of the above, Dopson et al. (2019) argue that leadership roles are shaped by the following:

- Incumbents' existing experience.
- A comprehensive understanding of the complex nature and relationships of the existing realities of organisational structures.
- Plans functions.
- Deep, transformational, financial, student and staff-related balances and realities associated with financial and infrastructure weaknesses.
- Forthcoming changes associated with upgrading systemic functions and realities severely affect demographic changes.

Such future problems and challenges demand unity of purpose from leadership and well-planned and structured alliances of all institutional stakeholders. This will guarantee an immediate commitment to common aims and objectives, which can not only pave the way forward but also joint development and perpetual nature (Duggan, 2019; Laderman & Weeden, 2020; Mitchell et al., 2019).

In addition, authors such as Teixeira and Mota (2020) believe that the reversal of the brain drain, notable during the Covid-19 pandemic from academic leaders, should be addressed through re-engineering business processes, sharing resources and improving networks. Meanwhile, El Masri and Sabzalieva (2020) have written that international partnerships should be technologically driven and benchmarked as best practices in their relations with policymakers. El Masri and Sabzalieva (2020) concluded that flexible policies and stakeholders' proactiveness should play a leading role in recovering from the pandemic.

The previously mentioned response and recovery solutions were echoed in a 2-day digital conference organised by the international finance company PwC. This event brought together a large number of senior university leaders who shared their opinions and beliefs regarding their role in the future of their institutions, the innovations needed and the critical priorities for the post-Covid-19 future. The common belief was that looking forward, changes were inevitable after returning to campus. The key challenges in need of short-term solutions included the following aspects (PwC, 2021):

- Digital education that needs a re-definition of digital learning pedagogy for both students and academics in terms of synchronised learning methods.
- The protection and expansion of existing revenues.
- The identification of alternative and additional revenue streams across the existing and wide-ranging segments.
- The possible diversification of the existing customer base.
- New strategies and tactics in planning and implementing international student expansion.
- The careful assessment of the institutional cost base.

- Focusing on costs that reduce spending eliminates non-core spending, redefines aspects of strategy, and a severe and well-structured consideration of longer-term new partnerships at all university levels, accompanied by transformation initiatives.

It could be said that such an analysis and recommendations could be judged as ‘down to earth’ or ‘conservative’ in nature, but the fact that they are based on university leaders – who have deep knowledge of their institutions – makes the results indisputable. Interestingly, very similar conclusions and recommendations were evident in empirical research undertaken by the European Union (Pells, 2021). The European Commission has said that removing barriers to collaboration in higher education will be at the centre of Europe’s recovery from Covid-19. All the priorities mentioned above that aim to recover from the pandemic were instrumental in maintaining the ‘leading status of European universities globally’. Better financial management, innovative leaders, building bridges for higher education cooperation, and expanding the customer base through attracting international students were crucial proposals in the empirical effort (Pells, 2021).

4 Conclusion

This desktop analytical study aimed to explore issues associated with the benefits and barriers to digital learning as a recovery tool in responding to the Covid-19 pandemic. Two major challenges resulted from the synthesis: a lack of digital knowledge among students and academics and digital fatigue, which impacts people’s work-life balance. Five recovery strategies emerged from the analysis: active digital collaboration and stakeholder participation; digital education; technological best practices; benchmarked policies; and honest and efficient communication, knowledge-sharing and business processes. The effectiveness of other recovery strategies which university leaders can apply is dissected in this book chapter. These include stakeholder collaboration, contingency plans, policy reforms and knowledge sharing. Based on the reviewed literature and analysed documents, the lack of digital knowledge application and fatigue among students and academic staff members have been described as major hindrances to effective recovery strategies in the university sector across the globe. However, scholars and practitioners have advised that technological improvements, digital upskilling (of students, academics and leaders) and redefined digital learning pedagogy (aligned to 4IR) as major recovery plans in the sector are fundamental to future success. It is also noteworthy that, as a major strategy to recover from the Covid-19 pandemic, active stakeholder participation and the harnessing of new forms are essential aspects. This can be achieved by removing barriers and building alliances with internal and external actors. These recovery strategies include technological collaboration, flexible policy changes, knowledge changes (digitally), smooth and honest communication channels and business processes, and proactive contingency plans that can play a pivotal role in recovering from the pandemic.

In summary, a host of recovery strategies can be applied in universities across the globe. These challenges shared by commentators in the university sector are similar, as well as the solutions that might be implemented differently when taking cognisance of university environments. There are limitations to this study as it relied on documents for its analysis. Nevertheless, there are vast opportunities for further researchers to scientifically test the themes and propositions from this book chapter as almost all the analysed papers review literature studies. This necessitates future researchers to apply quantitative methods in ascertaining the relevance and impacts of the recovery mentioned above strategies.

References

- Al-Baadani, A. A., & Abbas, M. (2020). The impact of coronavirus (Covid 19) pandemic on higher education institutions (HEIs) in Yemen: Challenges and recommendations for the future. *European Journal of Education Studies*, 7, 1–12.
- Alharbi, M. (2020). The economic effect of coronavirus (COVID-19) on higher education in Jordan: An analytical survey. *International Journal of Economics and Business Administration*, 8(2), 521–532. <https://doi.org/10.35808/ijeba/479>. Accessed 17 Oct 2021.
- Al-Maadeed, M., & Marques, M. A. (2020). *Challenges for higher education in crisis-stricken times – The effects of Covid-19 in preparing universities for the future*. Qatar University Press.
- Ashour, S., El-Refae, G. A., & Zaitoun, E. A. (2021). Post-pandemic higher education: Perspectives from university leaders and educational experts in the United Arab Emirates. *Higher Education for the Future*. <https://doi.org/10.1177/23476311211007261>. Accessed 16 Mar 2021.
- Bender, L. (2020). *Key messages and actions for COVID-19 prevention and control in schools*. UNICEF.
- Calonge, D. S., Aguerrebere, P. M., Hultberg, P., & Connor, M. (2021). Were higher education institutions' communication strategies well suited for the COVID-19 pandemic? *Journal of Education and Learning*, 10(4), 1–12.
- Camilleri, M. A. (2021). Evaluating service quality and performance of higher education institutions: A systematic review and a post-COVID-19 outlook. *International Journal of Quality and Service Sciences*, 13, 268.
- Coyne, C., Ballard, J. D., & Blader, I. J. (2020). Recommendations for future university pandemic responses: What the first COVID-19 shutdown taught us. *PLoS Biology*, 18(8), e3000889. Accessed 22 Mar 2021.
- Crawford, J., Butler-Henderson, K., Rudolph, J., Malkawi, B., Glowatz, M., Burton, R., et al. (2020). COVID-19: 20 countries' higher education intra-period digital pedagogy responses. *Journal of Applied Learning & Teaching*, 3(1), 1–20.
- Cuaton, G. P. (2020). Philippines higher education institutions in the time of COVID-19 pandemic. *Revista Românească pentru Educație Multidimensională*, 12(1/2), 61–70. <https://doi.org/10.1108/IJQSS-03-2020-0034>. Accessed 22 Dec 2021.
- Dopson, S., Ferlie, E., McGivern, G., Fischer, M. D., Mitra, M., Ledger, J., et al. (2019). Leadership development in higher education: A literature review and implications for programme redesign. *Higher Education Quarterly*, 73(2), 218–234.
- Duggan, J. D. (2019). Effects of recession linger in higher ed funding. *The Minnesota Daily*. <https://www.mndaily.com/article/2019/07/n-effects-of-recession-linger-in-higher-ed-funding>. Accessed 16 Mar 2021.
- EAIIE. (2020). *How higher education institutions can respond to COVID-19*. <https://www.eaie.org/blog/how-higher-education-institutions-respond-covid-19.html>. Accessed 16 Mar 2021.

- Education Development Trust (2020). *Key lessons on effective leadership during COVID-19 and beyond*. <https://www.educationdevelopmenttrust.com/our-research-and-insights/commentary/key-lessons-on-effective-leadership-during-covid-1>. Accessed 16 Mar 2021.
- El Masri, A., & Sabzalieva, E. (2020). Dealing with disruption, rethinking recovery: Policy responses to the COVID-19 pandemic in higher education. *Policy Design and Practice*, 3(3), 312–333. <https://doi.org/10.1080/25741292.2020.1813359>. Accessed 27 Sept 2020.
- Ferguson, H. T. (2020). *Cuts expected for state higher education funding in the wake of COVID-19*. National Association of Student Financial Aid Administrators. https://www.nasfaa.org/newsitem/21469/Cuts_Expected_for_State_Higher_Education_Funding_in_the_Wake_of_COVID-19. Accessed 21 Apr 2020
- Flavell, H., Harris, C., Price, C., Logan, E., & Peterson, S. (2019). Empowering academics to be adaptive with eLearning technologies: An exploratory case study. *Australasian Journal of Educational Technology*, 35(1), 1–15.
- Green, D. D., & McCann, J. (2020). Mapping disruption in higher education: The new faculty model. *American Research Journal of Business and Management*, 6(1), 1–7.
- Herbst, T. H. (2021). *Leading in times of disruption: Reimagining leadership and repositioning leaders*. <https://doi.org/10.5772/intechopen.100208>. Accessed 27 Oct 2022.
- <https://devpolicy.org/pivoting-to-respond-to-covid-19-early-thoughts-from-the-philippines-20200327/v>. Accessed 12 Nov 2021.
- <https://journals.qu.edu.qa/index.php/tajseer/article/view/1758>. Accessed 12 Oct 2021.
- Igoe, M., & Chadwick, V. (2020). *After the pandemic: How will COVID-19 transform global health and development?* Devex. <https://www.devex.com/news/after-the-pandemic-how-will-covid-19-transform-global-health-and-development-96936>. Accessed 11 May 2020
- Laderman, S., & Weeden, D. (2020). *SHEF: State higher education finance, FY 2019*. State Higher Education Executive Officers Association. https://shef.sheeo.org/wp-content/uploads/2020/04/SHEEO_SHEF_FY19_Report.pdf. Accessed 12 Nov 2021
- Marinoni, G., Van't Land, H., & Jensen, T. (2020). *The impact of COVID-19 on higher education around the world* (IAU global survey report). International Association of Universities. https://www.unibasq.eus/wpcontent/uploads/2020/06/iau_covid19_and_he_survey_report_final_may_2020.pdf. Accessed 20 Aug 2021
- McCann, T., & Polacsek, M. (2021). Understanding, choosing and applying grounded theory: Part 1. *Nurse Researcher*, 29(1), 1–16.
- McGaughey, F., Water Meyer, R., Shankar, K., Suri, V. R., Knight, C., Crick, T., et al. (2021). 'This can't be the new norm': Academics' perspectives on the COVID-19 crisis for the Australian university sector. *Higher Education Research & Development*, 1–16. <https://doi.org/10.1080/07294360.2021.1973384>. Accessed 22 Oct 2021.
- Mitchell, M., Leachman, M., & Saenz, M. (2019). *State higher education funding cuts have pushed costs to students, worsened inequality*. Center on Budget and Policy Priorities. <https://www.cbpp.org/research/state-budget-andtax/state-higher-education-funding-cutshave-pushed-costs-to-students>. Accessed 18 Jan 2020
- Molosankwe, B. (2020). UJ students reject planned online teaching to start next week. *The Star*, 17 April, 07 July 2021.
- Muftahu, M. (2020). Higher education and Covid-19 pandemic: Matters arising and the challenges of sustaining academic programs in developing African universities. *International Journal of Educational Research Review*, 4(5), 417–423.
- Muftahu, M. (2021). The development of private higher education in Nigeria: A comparative analysis between northern and southern region. *International Journal of Higher Education*, 10(3), 178–186.
- Ndevu, Z. (2020). Understanding the effects of COVID-19 on universities in South Africa: An evidence-based approach. *Alternation*, 32(Special edition), 275–293. <http://alternation.ukzn.ac.za/Files/articles/special-editions/32/11-Ndevu.pdf>. Accessed 10 Dec 2021
- Nganga, G., Waruru, M., & Nakweya, G. (2020). *Universities face multiple challenges in wake of COVID-19 closures*. University World News: African Edition. <https://www.universityworld-news.com/post.php?story=20200407162549396>. Accessed 21 Apr 2020

- Nixon, N., Chittick, S., & Faustino, J. (2020). Pivoting to respond to COVID-19: early thoughts from the Philippines *Dev Policy Blog*.
- Ozkan, S., & Koseler, R. (2009). Multi-dimensional students' evaluation of e-learning systems in the higher education context: An empirical investigation. *Computers and Education*, 53(4), 1285–1296.
- Pells, R. (2021). *University collaboration 'central to post-COVID recovery'*. Research Professional News. <https://www.researchprofessionalnews.com/post.php?story=20211023150016370>. Accessed 10 Dec 2021
- Powell, K. (2020). Science-ing from home in the coronavirus era. *Nature*, 580(7803), 419–421. <https://doi.org/10.1038/d41586-020-00935-3>. Accessed 10 Dec 2021.
- PwC. (2021). *Home research and insights: COVID-19 recovery and transformation impact on the higher education sector*. <https://www.pwc.com/sg/en/publications/a-resilient-tomorrow-covid-19-response-and-transformation/higher-education.html>. Accessed 10 Dec 2021.
- Riele, J. (2020). *Coronavirus and its impact on higher education*. https://www.researchgate.net/post/Corona_Virus_and_its_impact_on_higher_education. Accessed 21 Apr 2020.
- Satriawan, M. I. (2021). Synergy of higher education collaboration with local governments in efforts to overcome the COVID-19 pandemic. *Academic Journal of Interdisciplinary Studies*, 10(2), 240–260.
- Smalley, A. (2020). *Higher education responses to Coronavirus (COVID-19)*. National Conference of State Legislatures. <https://www.ncsl.org/research/education/higher-education-responses-to-coronavirus-covid-19.aspx>. Accessed 21 Apr 2020
- Teixeira, A. M., & Mota, J. (2020). The importance of being open: How European open universities can reposition in the post-pandemic higher education landscape. *EDEN Conference Proceedings*, 1, 178–188.
- UNESCO. (2020). *Protecting and transforming education for shared futures and common humanity – A joint statement on the COVID-19 crisis*. ReliefWeb. <https://reliefweb.int/report/world/protecting-and-transforming-education-shared-futures-and-common-humanity-joint>. Accessed 22 Nov 2021
- Watermeyer, R., Shankar, K., Crick, T., Knight, C., McGaughey, F., Hardman, J., et al. (2021). 'Pandemia': A reckoning of UK universities' corporate response to COVID-19 and its academic fallout. *British Journal of Sociology of Education*. <https://doi.org/10.1080/01425692.2021.193705>. Accessed 13 Dec 2021.
- Wigginton, N. S., Cunningham, R. M., Katz, R. H., Lidstrom, M. E., Moler, K. A., Wirtz, D., et al. (2020). Moving academic research forward during COVID-19. *Science*, 368(6496), 1190–1192. <https://doi.org/10.1126/science.abc5599>. Accessed 14 Dec 2021.
- Zhaohui, W. (2020). *How a top Chinese university is responding to coronavirus?* <https://www.weforum.org/agenda/2020/03/coronavirus-china-the-challenges-of-online-learning-for-universities>. Accessed 29 May 2020.
- Zhong, R. (2020). The coronavirus exposes education's digital divide. *The New York Times*. <https://www.nytimes.com/2020/03/17/technology/china-schoolscoronavirus.html>. Accessed 28 May 2020.

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