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Development implications of pedagogical and academic service interventions to cope with COVID-19 influences in African colleges and universities

Byron Brown\(^1\) and Ntonghanwah Forcheh\(^2\)

**Abstract:** The COVID-19 pandemic had differential impact on educational systems globally. Many of the emergency measures taken in response to the COVID-19 impact in higher education appear to have implications for economic and human development as well as the right to education. This study investigated COVID-19 influences on pedagogy and academic services in colleges and universities in an African country and draws out mitigations that might be required in light of long-term development concerns. The study found that the pandemic had negative impacts on teaching methods, communication, and institutional characteristics, with private institutions being more likely to report uncertainty in meeting enrollment targets and experiencing disruption in student admission-related communication, compared to public institutions. The study also found that academic services were negatively impacted, particularly in key areas of student recruitment, enrollment planning, and communication. Unreliable and inaccessible internet and technology communication systems were the pitfalls of the business continuity measures implemented. The paper draws out mitigations that might be required in light of long-term development concerns and has implications related to economic and human development as well as the right to education that can inform policy and planning.

**Subjects:** Adult Education and Lifelong Learning; Higher Education; School Leadership, Management & Administration; Classroom Practice; Curriculum Studies

**Keywords:** Pedagogy; COVID-19 impact; education-in-emergencies; enrollment; higher education; Botswana

1. Introduction
The COVID-19 pandemic has affected practically every facet of human life, globally. The higher education sector is no exception. The pandemic has disrupted educational practices in the global...
higher education systems, and UNESCO (2022) and the United Nations (2020) have characterized the upheaval as the largest in history. In Africa, one of the disruptive outcomes of the pandemic was the closure of colleges and universities—premised on the principle at the time that large congregations of individuals pose health risk to the public (UNESCO, 2022; United Nations, 2020; World Bank, 2020).

College and university systems across Africa, as elsewhere, have been impacted by COVID-19 differently, although the nature of the impact is not yet clear (Mbazzi et al., 2021; UNESCO, 2022). One of the reasons for it is that while education institutions are generally expected to have a plan to deal with short-term disruptions (e.g., flooding from heavy rainfall), it is rare for them to have emergency plans to cope with health crisis of the magnitude of the COVID-19 outbreak. It is hardly a surprise that the majority of colleges and universities did not have any contingency plans to respond to the COVID-19 emergencies. Although it is often the case that, in the business sector, organisations operate with a contingency plan as part of their risk mitigation agenda (Fernandes & Gama, 2014), in the higher education sector, some scholars believe that it would be unrealistic to expect university/college leaders, or national governments, to have prepared such plans for large-scale and long-term emergencies, such as the COVID-19 crisis because of their infrequent occurrences (Belford, 2021; Liou, 2020).

Notwithstanding, educational systems that have been better resourced before the outbreak of the pandemic have shown to respond better, and scholars surmised that their responses could be related to the ownership structure and business continuity mechanisms they had put in place in anticipation of severe and prolonged emergencies (Alex, 2022; Daly, 2022; Kyamazima, 2020).

In the heights of the COVID-19 pandemic, many higher education leaders in Africa have had to develop responses that addressed three outcomes of the emergencies. First, student displacement. Many students were forced to move off campus as a result of the lockdown and social distance measures imposed by the government of their respective countries (Alex, 2022). Consequently, many university leaders had to devise innovative ways to give students access to education and minimize learning loss (Alex, 2022; Daly, 2022; United Nations, 2020). Second, student isolation. The social life that students had on campus was disrupted, leading many students to develop mental health challenges. A number of researchers (e.g., Kajee, 2022; Kaparounaki et al., 2020; Mbazzi et al., 2021), writing about the effects of the COVID-19 condition in African higher education system, reported isolation as a condition that students and academic staff experienced during the lockdown periods. Mooko (2022) and Kaparounaki et al. (2020) blamed the student isolation on the sudden disruption in their campus social life and contended that university lecturers and students are largely socialised to learn and teach through in-person interactions that they have been exposed to from the moment they began their schooling life. The face-to-face setting is an environment with which students and academics are familiar, and in which they have developed the skills to function (Mooko, 2022). The restrictions resulting from COVID-19 curtailed this valuable interaction—and induced feeling of isolation (Mckinsey, 2020). Third and finally, learning discontinuity. College and university leaders had to develop responses that addressed the prospect of learning loss and business discontinuity (du Plessis et al., 2022; Mckinsey, 2020). Although this requirement was not unique to Africa, it was particularly novel in the African context because over 90% of the higher education student population are full-time students (Alex, 2022; UNESCO, 2022). Many of these students lived in rural, deep rural, impoverished and disadvantaged communities that do not have access to services such as internet and electricity (Alex, 2022; Kajee, 2022). One would expect that any business continuity plans deployed to sustain student access to knowledge while off-campus would take contextual variables into account, as well as government policy direction as it relates to the budget for university student subsidy. As Dube (2020) indicates, by the end of 2020, amidst crisis, some African Governments had already hinted at financial cutbacks in higher education.
This study investigated the education reforms that have been introduced in pedagogy and in academic services in response to the COVID-19 upheaval and assessed the long-term economic and human development implications. This focus on development is particularly important because while many African countries have private and public institutions offering higher education, the size of these institutions is not the same (Brown et al., 2022a). Understanding the response differential would provide new insights for knowledge development as well as for policy and practice. An appreciation of the kind of interventions introduced at different stages of the pandemic and subsequently after the lifting of the lockdowns can inform contingency planning for future emergencies. The substantive theories gained from the evidence can form the starting point of sustainable educational policy planning.

2. Literature

2.1. Education in emergencies and post-emergencies

Education provision in emergencies implies that structured learning no longer occurs under normal classroom conditions, or as specified in the planned curriculum (Belford, 2021; Daly, 2022). In an educational setting, the circumstance of an emergency implies that traditional classroom practices, which have worked well for many decades, can no longer be deployed or the delivery systems with which the practitioners have grown familiar can no longer be deemed appropriate for the crisis conditions (Daly, 2022). In other words, the normal education delivery system that has been relied upon would need to be reconceptualised—usually within a very short period of time. Although education practitioners typically plan for change, the unexpected occurrence of an emergency dictates that they would typically be pushed into a situation where they would have to experiment with, and implement, new approaches, methodologies, and philosophies of teaching as a matter of urgency (Brown & Irons, 2022). Mooko (2022) concurs, arguing that in an emergency, learning institutions would not have much time to determine which curriculum or class groups could be taught more or less effectively through off-campus means, or which ones would not go very well with the off-campus dispensation. Education in emergency imposes change and beckons alternative approaches and new patterns of behaviour.

There is consensus among researchers that the COVID-19 pandemic that hits the higher education sector was a unique crisis (OECD, 2020; UNESCO, 2020; 2022). The pandemic has been regarded as unprecedented not just because of its magnitude as a global problem (UNESCO, 2020), but also as a result of the learning interaction revolutions it triggered (Alex, 2022; Brown et al., 2023; Brown & Irons, 2022; du Plessis et al., 2022; Mbazzi et al., 2021; UNESCO, 2022). The scale of the crisis forced both the education and business sectors to close in response to government lockdown mandates (Dube, 2020). Many of the academic plans that universities and colleges had put in place for student learning interactions were no longer consistent with the new reality imposed by the COVID-19 crisis. The onset of the pandemic produced a new context that nobody had planned for or anticipated. One of the clear consequences of the campus closure was disruption in students’ face-to-face learning as well as their practicum and field experience interactions usually undertaken in the industry sector (Brown et al., 2022b). The onset of the COVID-19 emergency meant that the link between industry and the higher education sector was broken, as the work from home policy, implemented in some corporate sectors, prevented students from accessing workplaces for purposes of gaining the requisite practical exposure that contributes to both the quality and relevance of their curriculum (Mooko, 2022). There is evidence that the unforeseen COVID-19 occurrence shocked many African higher education systems (Kajee, 2022).

In addition, some scholars have argued that the health emergency shattered many expectations that students had for entering higher education (Brown & Irons, 2022; Athuman, 2021). Meeting great people, indulging in academic interactions with faculty, and being inspired by experts in their field of study are among the reasons many students opted to go full time to university or college (Mooko, 2022). The anticipated interaction with renowned scholars informed the decision of many
students to choose one university over another (Mooko, 2022). Yadav et al. (2022) reported that besides the quality or diversity of their academic offerings, many higher education institutions use the distinct social life that they offer, or the attractiveness of nearby cities, to lure students to their campus. For the vast majority of students, the requirement to “social distance” or to learn through digital platforms, or to simply sit at home without any in-person learning engagements, limited their opportunities for interaction with academic staff or the peculiar campus and its surrounding social milieu. The social isolation at home or the switch to technological platforms took away the human touch that is associated with in-person interactions (UNICEF, 2023). These issues hold consequences for university and college recruitment. However, in the context of emergencies, they have not been directly investigated.

Depending on the type of institution (e.g., public or private), colleges and universities have had to balance responding to the social-distance requirements of the emergency with safeguarding their reputation as institutions of higher learning. Amidst the COVID-19 disruptions and dislocations, systems of accreditation and quality assurance were questioned as modes of study changed quickly (Hodges et al., 2020; Kjee, 2022), mode of assessment were altered (Alex, 2022), and sporadic campus closures took effect (du Plessis et al., 2022; United Nations, 2020). In African states like Botswana, a number of under-resourced public universities and colleges with weak information communication technology systems and digital learning infrastructure (Moakofi et al., 2017), the leaders opted to halt business operations and wait out the sporadic lockdown mandate periods as they had no resources to switch to digital modes (Brown et al., 2023). Botswana was not the only African nation where academic leaders took such decision (UNESCO, 2020). Mooko (2022) contends that the reputation that many of these institutions had built up over the years meant nothing because the COVID-19 crisis presented a new challenge, and their promise of a stimulating campus environment and pledge of excellent student–academia interaction could not be kept. Although attempts are being made to rebuild dented reputation, especially since the lifting of emergency lockdown regulations, the issues mentioned hold ramifications not just for public perception of the institutions but also for long-term development of the human capital and economic advancement—given the close link between education, skills, and labour productivity (UNICEF, 2023).

2.2. COVID-19 impact on pedagogy and academic services

A number of studies have reported COVID-19 related impact on higher education (Alex, 2022; Athumani, 2021; Barbados Today, 2020; Brown et al., 2023; Cao et al., 2020; du Plessis et al., 2022; Kaparounaki et al., 2020; Mbazzi et al., 2021; Tirivayi et al., 2020; McKinsey, 2020; Owusu-Fordjour et al., 2020; World Bank, 2020). For African nations, the most pervasive impact reported has been disruption in learning and dislocation and death of many students and academics; (Athumani, 2021; Owusu-Fordjour et al., 2020; du Plessis et al., 2022), and learning loss (Alex, 2022; OECD, 2020; Yadav et al., 2022). There have been recommendations with regard to interventions for diagnosing the learning gaps and putting remedial action plans in place at individual and institutional level to address these gaps (Belford, 2021; Cao et al., 2020; Owusu-Fordjour et al., 2020; UNESCO, 2022; World Bank, 2020; Yadav et al., 2022). In the African context, an area of analysis that has been overlooked is the long-term development implications of the interventions that have been put in place in response to the COVID-19 emergency. There is yet a clear picture, for example, of how weaknesses in academic service processes, in the midst of lockdowns and the COVID-19 crisis, have contributed to university entry delay for prospective students and the ramifications of this for future income earnings.

In Botswana, and its neighbouring Southern Africa countries, there is evidence that some institutions of higher learning opted to close business operations, while others made attempts to embrace technology by rapidly shifting face-to-face pedagogical operations to online platforms (Alex, 2022; Brown et al., 2023; du Plessis et al., 2022). These distinct approaches connote different ramifications for students studying towards a similar degree at these institutions. For example, du Plessis et al. (2022) found learning loss to be one of the likely outcomes particularly if deliberate
intervention efforts are not made to close the skills and knowledge gap. Hodges et al. (2020) described the reform in higher education teaching methods and approaches in response to the COVID-19 crisis as makeshift, and as a crude improvisation in practice, and argued that it would lead to student losing a proportion of their learning time because the methodology had not been carefully planned and academics had to learn to use the technological platforms in the presence of students who showed up for lessons. Kajee (2022) and others (Alex, 2022; UNICEF, 2023) have also pointed to inaccessibility of the internet due either to data and device costs or the geographic location of the staff or/and student’s residence, during the lockdown period, or during hybrid mode of learning, as contributing to the loss of learning time. The failure to close learning gaps would result in students being behind where they should be in educational attainment.

The United Nations (2020) has indicated that the COVID-19 crisis has worsened opportunity gaps, especially for students from underprivileged backgrounds. In Botswana, and other parts of Africa, these are students who hail from informal urban and rural communities, with household poverty and additional support needs, playing a key role (Mbazzi et al., 2021). The opportunity gaps that worsen for these students can manifest in two forms, one which Garcia and Weiss (2020) have referred to as the access to the resources and circumstances that support and enrich the learning gap. In welfare-oriented African countries such as Botswana, where students rely on government, these would include university students unable to access government-funded living allowances, and other financial relief interventions (e.g., Orphans and Vulnerable Children scheme) that sustain the livelihood of these individuals (Dube, 2020). The other opportunity gap is uneven access to internet connectivity and to computers and related devices to make remote teaching and learning accessible. As Owusu-Fordjour et al. (2020) reported in the case of Ghana, the presence of the digital divide made a challenge for many students to access teaching and learning sessions and resources during the closure of school. This experience is no different for students in higher learning institutions in Southern Africa (Alex, 2022; Brown et al., 2023; du Plessis et al., 2022). More research is needed to understand the role opportunity gap is playing in access to education in African countries in light of the COVID-19 crisis.

Being confronted by the COVID-19 crisis leads not only to a widening of opportunity gaps and learning loss but also, as Kaparounaki et al. (2020) have found, to mental health distress for staff and students, exposure to uncondusive learning environment at home, domestic abuse and violence, and a reduction in the development of social skills. The effects of some of these emotional strains have been found to include anxiety, depression, suicidal thoughts, reduced sleep, poor concentration, PTSD symptoms, as well as feelings of isolation and low mood (Kajee, 2022; UNICEF, 2023). Alex (2022) has theorised that the consequences of these distresses are still lingering in the psyche of many victims—long after the lockdown conditions have ended. All of these mental ill-health symptoms can negatively impact human learning, social development, and the quality of life (Kaparounaki et al., 2020; Kyamazima, 2020). Evidence shows that without urgent intervention to normalize the situation (Dube, 2020; UNICEF, 2023), students with mental health problems are twice as likely to not develop the skills needed to make the transition into adult lives and the labour market. Investigating the type of initiatives being implemented to ameliorate the long-term impact of mental health on educational development is a necessary step in higher education in the African context.

Motivating young people to enter higher education, or to be committed to further studies, during periods of a depressed domestic and global economy is one of the ramifications of the COVID-19 crisis that confronts higher education pedagogy practitioners and decision makers. Socio-economic forecast by the Africa Development Bank (2022) stated that unemployment in Botswana and South Africa, for example, is likely to widen as a result of the COVID-19 impact. There is a similar outlook for other African nations (Africa Development Bank, 2022; UNDP, 2020). There is an indirect relationship between unemployment and postgraduate enrollment (Wright et al., 2013). It is well documented that in depressed economic conditions, opportunity costs make the need for individuals, with at least a first degree, to want to further their education to
postgraduate level far less attractive (Wright et al., 2013). The opposite is true for individuals without undergraduate level education, as unemployment coerces them to enroll in college or university to gain skills and knowledge (Borbados Today, 2020; Garcia & Weiss, 2020; McKinsey, 2020; Wright et al., 2013). However, in the African context, affordability may mediate study intention but such matters; likewise, university’s responses to attract and retain potential postgraduates during period of high unemployment may influence enrollment. But none of these issues have been investigated.

2.3. Institutional characteristics and responses to COVID-19 impact on pedagogy and academic services

The literature has not dealt in much detail on COVID-19 impact by institutional characteristics such as size and ownership arrangement. Nevertheless, Witze (2020) reported that while all institutions face major financial problems, wealthy, privately owned, colleges and universities are better placed to survive financial losses resulting from crises. In crisis management situations, private institutions have traditionally been able to make quicker decisions and possess the capacity to respond swiftly in resource reallocation to solve problems due to fewer institutional bureaucracies (Oleksiyenko et al., 2022). However, Witze (2020) argues that the COVID-19 crisis has the potential to force institutions of higher learning to reform their business models, merger and acquisition, formation of overseas micro-campus networks, and closure being possible outcomes. While there has not been published work around higher education business model alteration as a result of COVID-19, available evidence shows that private institutions, compared to public ones, are more prone to business model and ownership structure shifts because of their concerns with the bottom line (Oleksiyenko et al., 2022; Yadav et al., 2022). In Botswana, private institutions adopted a “bare-bones” approach of normal teaching practice during the heights of the COVID-19 emergency (Brown et al., 2023). Changes in university or college operational structures tend to have a bearing on the academic services offered to students, as Head et al. (2002) observed.

To cope with risks and assure continuity in operations, Daly (2022) and Belford (2021) have argued in favour of the inclusion of contingency planning in higher education institution management. However, it appears from available evidence that contingency planning was not a practice in many African colleges and universities (Owusu-Fordjour et al., 2020). In their review of the education systems in Ghana, following the COVID-19 outbreak, Owusu-Fordjour et al. (2020) alluded that the higher education system did not have contingency plans to respond to the COVID-19 emergency. Institutions in Ghana were not alone in this oversight, as evidenced by the hurried pedagogical and academic service responses in universities in other parts of Africa (Alex, 2022; Aristovnik et al., 2020; Kajee, 2022; United Nations, 2020). Contingency planning provides an alternative arrangement for business recovery in emergencies (Fernandes & Gama, 2014).

Regardless of institutional type, Garcia and Weiss (2020) proposed a framework for responding to an emergency in the absence of a contingency plan in the higher education sector. This framework consists of three phases: Relief, Recovery, and Rebuild. The relief phase includes support for institutional systems and human resources. The World Bank (2020) extended the notion of relief to include policy adjustments to cater for educational changes and resource utilization. By contrast, the recovery phase is linked to campus reopening and a return to in-person teaching and learning and support activities wherein focus is placed on learning recovery interventions, system redesign, and reculturing of staff for the new dispensation (Garcia & Weiss, 2020). Rebuilding is closely linked to the recovery phase as it involves an auditing of the entire institutional system to determine areas for redesign to support the socio-emotional, cognitive, and psychological development of students (Garcia & Weiss, 2020). The framework offers a useful map for conceptualising and discussing the response to the emergency in this study.

3. Purpose of the study

The study investigated the influence of the COVID-19 crisis on pedagogy and academic services in colleges and universities, using Botswana as a context, with the main focus being the appraisal of the implications of the responses for economic and human development. A range of impact areas
covering teaching methods, communication, and institutional characteristics were explored to ascertain the nature of the influences and the interventions.

4. Methodology of the study

4.1. Study context
The study was conducted in one African country, namely Botswana. The Botswana context is unique in various ways. For example, Botswana higher education sector comprised a mixture of both public and private institutions, and higher education (i.e., degree-level study) is offered at both colleges and universities across the country, with the government highly subsidising student tuition fees (Mooko, 2022). There is no other country in Africa where students are provided with free college/university level education. Botswana currently has 5 public and 10 private colleges and universities (HEDC, 2019), and these 15 institutions account for approximately 90% of the higher education enrollment (HEDC, 2019). There are other non-degree granting colleges, totalling 24 in number in the country. Collectively, Botswana consisted of 39 colleges and universities that offered some form of post-secondary school education and training.

Prior to the outbreak of the COVID-19 pandemic, the fulltime, traditional, face-to-face, mode of study was the main practice in the higher education sector in Botswana; more than 96% of these institutions offered programmes full time and face-to-face (Brown & Forcheh, 2009). This was similar to practices in regional African countries (du Plessis et al., 2022). The COVID-19 outbreak, and the subsequent social distancing requirements, which came into effect on the 1 April 2020, motivated campus closure in response to Botswana Government lockdown orders (Brown & Irons, 2022).

4.2. Study design
The study followed a survey design. This design facilitated engagement with a wide cross-section of academic leaders in order to first, describe the impact and response trends across the majority of the colleges and universities and, second, to verify the impact COVID-19 had by institutional characteristics. Other non-experimental designs could provide the flexibility of a survey (Creswell, 2012).

4.3. Sample and sampling
The study sample was the vice-chancellors or principals of the institutions. The vice-chancellors or principals were better placed to narrate the influence of the pandemic on university practices and services. A letter with the questionnaire was sent to all 39 institutions, inviting the academic leaders to participate, but only 35 of them responded. Thus, convenience sampling was the preferred method, covering the vice-chancellors or principals in the higher education institutions. Table 1 shows a summary of the sample profile. Colleges made up the bull of the institutions.

<table>
<thead>
<tr>
<th>Sample characteristics</th>
<th>Description</th>
<th>Number</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Institutional type</td>
<td>College</td>
<td>28</td>
<td>80</td>
</tr>
<tr>
<td></td>
<td>University</td>
<td>7</td>
<td>20</td>
</tr>
<tr>
<td>Ownership arrangement of the institution</td>
<td>Public higher institution</td>
<td>21</td>
<td>60.0</td>
</tr>
<tr>
<td></td>
<td>Private higher institution</td>
<td>14</td>
<td>40.0</td>
</tr>
<tr>
<td>Institutional size</td>
<td>Below 3000 students</td>
<td>27</td>
<td>77.1</td>
</tr>
<tr>
<td></td>
<td>Between 3000 and 6000 students</td>
<td>6</td>
<td>17.1</td>
</tr>
<tr>
<td></td>
<td>Above 6000 students</td>
<td>2</td>
<td>5.7</td>
</tr>
</tbody>
</table>
4.4. Data collection

The data collection instrument was a questionnaire. The questionnaire had three sections, as follows: (a) institutional characteristics; (b) dimensions of pedagogical practices, and (c) interventions introduced in response to the COVID-19 outbreak. The pedagogical practices were academic calendar conclusion and commencement, syllabus coverage, student assessment in time constraint and practical components, enrollment planning, and admissions decisions. Academic services included enrollment planning and student admissions.

The response scale of the questionnaire was ordinal, requiring participants to indicate between strongly agree to strongly disagree, as well as dichotomous, where an indication of whether a phenomenon was experienced or not experienced was needed. The questionnaire was self-developed based on the literature review (Creswell, 2012). As such, the instrument was validated by experts in education management and curriculum development who evaluated its content coverage, constructs measured, and its overall appearance as an instrument on the topic. The Cronbach Alpha of the instrument was 0.89.

4.5. Data analysis

The data analysis was both descriptive and inferential, with the descriptive being frequency and percentages, while Chi-square test of associations was the main influential statistics. The study was interested in the significant associations between COVID-19 impact and dimensions of pedagogical and academic services outcomes. In this regard, COVID-19 functioned as a treatment. There is a body of statistical literature that supports the principle that by directly asking individuals for their perceived or lived experience of COVID-19 with respect to pedagogical practices and academic services, they can make an informed judgment of their reality with and/or without the intervention of the COVID-19 crisis (Aucejo et al., 2020; Wiswall & Zafar, 2020). For example, experience of semester syllabus coverage; the questionnaire asked academic leaders “How has the COVID-19 crisis affected syllabus coverage in the January to June 2020 semester?” The responses to this question gave an indication of the impact on overall syllabus coverage.

Analysis was made of the impact separately and by institutional characteristics. There is literature showing that subjectively observed, or anticipated, outcomes can be used to understand decision-making under conditions of uncertainty (Shapiro & Giustinelli, 2019).

5. Findings

The results of the analysis are presented below. For ease of reference, all the results are presented in accordance with the research objectives stated above.

![Figure 1. Pedagogical and academic service areas affected by COVID-19, n=35.](image_url)
Table 2. Normal versus revised start date of 2020/21 academic year across institutions

<table>
<thead>
<tr>
<th>Normal start date (1st)</th>
<th>Revised start date (1st), n=35</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Aug</td>
<td>Sept</td>
</tr>
<tr>
<td>July</td>
<td>10.5% (2)</td>
<td>47.4% (9)</td>
</tr>
<tr>
<td>August</td>
<td>0.0 (0)</td>
<td>40.0% (4)</td>
</tr>
<tr>
<td>Other</td>
<td>0.0 (0)</td>
<td>16.7% (1)</td>
</tr>
<tr>
<td>Total</td>
<td>5.7% (2)</td>
<td>40.0% (14)</td>
</tr>
</tbody>
</table>

5.1. COVID-19 impacts on pedagogical practices and academic service areas

The reported impact areas are shown in Figure 1.

Figure 1 shows the main pedagogical areas where COVID-19 impacted the majority of institutions: (a) programmes with job placement and practical laboratory work requirements; (b) curriculum coverage; and (c) assessments. Slightly more than 97% of colleges and universities reported being negatively affected in these areas.

Figure 1 also shows the main academic service areas negatively affected by the COVID-19 in many of the colleges/universities: (a) Student recruitment and enrollment planning for the new academic year; and (b) the academic calendar for the new academic. While 85.7% of institutions agreed that COVID-19 outbreak disrupted admission-related communications between the institutions and prospective students, slightly less (68.6%) anticipated a reduction in new student intake for the ensuing academic year. Uncertainty in achieving planned enrollment projections were experienced by 60% of the institutions.

Furthermore, Table 2 shows that slightly more than 60% (62.8%) of the colleges and universities have had to delay the start of the new academic year by at least 1 month due to COVID-19 lockdown impact. For example, colleges/universities who normally begin the academic year in July postponed it to August (10.5%); September (47.4%), or even October (31.6%).

5.2. COVID-19 impact by institutional characteristics

The following five dimensions of institutional characteristics were further investigated to ascertain COVID-19 impact: institutional type, institutional ownership, institutional size, institutional handling of enrollment applications, and planned mode of teaching for the new academic year. The results are shown in Table 3.

Table 3 shows that, more universities (100%) compared to colleges (82.1%) experienced disruption in communication about admission with prospective students. Moreover, compared to colleges (50%), more universities (100.0%) felt uncertainty about meeting planned enrollment. Likewise, more universities (85.7%) compared to colleges (64.3%) believed they would experience decline in new student intake for the new academic year. By contrast, more colleges (100.0%) compared to universities (85.7%) experienced COVID-19 disruption in teaching and learning practices.

Table 4 shows tests of association between the institutional characteristics and the COVID-19 impacts. Only four institutional characteristics were significantly associated with impact factors:
Institutional ownership, institutional size, institutional handling of student admission, and institution's choice of pedagogical approach.

In terms of institutional ownership, Tables 3 and 4 show that private colleges and universities (100.0%) were significantly more likely to report uncertainty in meeting enrollment target, compared to public colleges and universities (33.3%). In addition, private institutions (100.0%) were significantly more likely to experience disruption in student admission-related communication, compared to public colleges and universities (76.2%).

In terms of institutional size, Tables 3 and 4 show that colleges and universities with a student population of 3000 or more (100.0%) were significantly more likely to report uncertainty in meeting planned enrollment targets, compared to institutions with a student population below 3000 (48.1%).

### Table 3. Frequency distribution of COVID-19 impact by institutional characteristics

<table>
<thead>
<tr>
<th>COVID-19 impact areas</th>
<th>Institutional characteristics</th>
<th>Type (Agreed%)</th>
<th>Ownership (Agreed%)</th>
<th>size (Agreed%)</th>
<th>Applications (Agreed%)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>College</td>
<td>University</td>
<td>&lt;3000</td>
<td>≥3000</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(64.3)</td>
<td>(85.7)</td>
<td>(63.0)</td>
<td>(87.5)</td>
</tr>
<tr>
<td>Factor 1</td>
<td></td>
<td>18</td>
<td>6</td>
<td>17</td>
<td>7</td>
</tr>
<tr>
<td>Factor 2</td>
<td></td>
<td>14</td>
<td>7</td>
<td>13</td>
<td>8</td>
</tr>
<tr>
<td>Factor 3</td>
<td></td>
<td>23</td>
<td>7</td>
<td>22</td>
<td>8</td>
</tr>
<tr>
<td>Factor 4</td>
<td></td>
<td>28</td>
<td>6</td>
<td>27</td>
<td>7</td>
</tr>
</tbody>
</table>

Factor 1: Affected teaching and learning as new student intake has reduced for the new academic year; Factor 2: Caused uncertainty in enrollment planning (e.g., slow feedback on new student applications); Factor 3: Disrupted communication on student admission; Factor 4: Affected previous semester's teaching and learning: Practical work, work attachment, calendar extension.

### Table 4. Association between institutional characteristics and COVID-19 impact

<table>
<thead>
<tr>
<th>COVID-19 impact areas</th>
<th>Institutional characteristics</th>
<th>Type (Agreed%)</th>
<th>Ownership (Agreed%)</th>
<th>size (Agreed%)</th>
<th>Applications (Agreed%)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Chi-square</td>
<td>**Sig.</td>
<td>Chi-square</td>
<td>**Sig.</td>
</tr>
<tr>
<td>Factor 1</td>
<td></td>
<td>1.193</td>
<td>.275</td>
<td>3.734</td>
<td>.053</td>
</tr>
<tr>
<td>Factor 2</td>
<td></td>
<td>5.833</td>
<td><strong>0.016</strong></td>
<td>15.556</td>
<td><strong>0.000</strong></td>
</tr>
<tr>
<td>Factor 3</td>
<td></td>
<td>1.458</td>
<td>.227</td>
<td>3.889</td>
<td><strong>0.049</strong></td>
</tr>
<tr>
<td>Factor 4</td>
<td></td>
<td>4.118</td>
<td><strong>0.042</strong></td>
<td>0.686</td>
<td>.407</td>
</tr>
</tbody>
</table>

Factor 1: Affected teaching and learning as new student intake has reduced for the new academic year; Factor 2: Caused uncertainty in enrollment planning (e.g., slow feedback on new student applications); Factor 3: Disrupted communication on student admission; Factor 4: Affected previous semester's teaching and learning: Practical work, work attachment, calendar extension.

Note: * Chi-square statistic significant at .05 level. **df=1.
In terms of institution's handling of student admission applications, Tables 3 and 4 show that colleges/universities that handled enrollment applications manually (53.3%) were significantly more likely to experience disruption in student admission-related communication, compared to institutions that used web-based (or combination of web-based and manual) system (46.7%). However, institutions that used a web-based or online system (or a combination of web-based and manual systems) to manage enrollment applications (61.9%) were significantly more likely to experience uncertainty in meeting planned enrollment targets, compared to institutions that used a manual system only (38.1%).

In terms of institution's choice of pedagogical approach, Table 5 shows colleges and universities that did not experience uncertainty in meeting enrollment target were more likely to choose a face-to-face pedagogical approach (78.6%), compared to institutions that experienced uncertainty. Institutions that experienced uncertainty in meeting planned enrollment were more likely to opt for a remote, blended/online learning pedagogical approach (57.9%).

5.3. Major interventions introduced following the emergency
A multi-pronged intervention was implemented in many of the colleges and universities. Figure 2 shows the key interventions.

5.3.1. Pedagogy related interventions
As shown in Figure 2, only 42.9% of the colleges/universities changed pedagogical approach by shifting teaching from face-to-face to a web-based approach such as blended learning or online teaching. Furthermore, more than 90% (94.3%) of the institutions implemented class-regrouping measures which reduced class sizes—perhaps to comply with social distancing requirements.

As indicated earlier in Figure 1, more than 97% (97.1%) of colleges and universities have had to extend the academic year affected by the COVID-19 lockdown disruptions in order to recover

### Table 5. Pedagogical approaches by COVID-19 impact areas

<table>
<thead>
<tr>
<th>COVID-19 impacts</th>
<th>Teaching-learning approach</th>
<th>Test of association</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Face-to-face only</td>
<td>Online/Blended</td>
</tr>
<tr>
<td>% (count)</td>
<td>% (count)</td>
<td>% (count)</td>
</tr>
<tr>
<td>Factor 1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Impacted</td>
<td>54.2 (13)</td>
<td>45.8 (11)</td>
</tr>
<tr>
<td>Not impacted</td>
<td>63.6 (7)</td>
<td>36.4 (4)</td>
</tr>
<tr>
<td>Factor 2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Impacted</td>
<td>42.9 (9)</td>
<td>57.1 (12)</td>
</tr>
<tr>
<td>Not impacted</td>
<td>78.6 (11)</td>
<td>21.4 (3)</td>
</tr>
<tr>
<td>Factor 3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Impacted</td>
<td>50.0 (15)</td>
<td>50.0 (15)</td>
</tr>
<tr>
<td>Not impacted</td>
<td>100.0 (5)</td>
<td>0.0 (0)</td>
</tr>
<tr>
<td>Factor 4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Impacted</td>
<td>58.8 (20)</td>
<td>41.2 (14)</td>
</tr>
<tr>
<td>Not impacted</td>
<td>0.0 (0)</td>
<td>100.0 (1)</td>
</tr>
</tbody>
</table>

Factor 1: Affected teaching and learning as new student intake has reduced for the new academic year;
Factor 2: Caused uncertainty in enrollment planning (e.g., slow feedback on new student applications);
Factor 3: Disrupted communication on student admission;
Factor 4: Affected previous semester’s teaching and learning: Practical work, work attachment, calendar extension
learning and conclude assessment requirements—perhaps due to limited web-based infrastructure and unpreparedness to change teaching mode at the time of the campus closure.

Furthermore, Figure 2 shows that a few (5.7%) of the institutions implemented measures to host student assessments in either of two modes, i.e., online mode, and face-to-face mode—perhaps a reflection of weak internet connectivity and access to device for internet challenges among majority of the institutions and students.

Academic policy responses to the COVID-19 crisis was also made. In written commentaries on the questionnaires, academic leaders stated that adjustments in academic policies were made to support the alterations to the pedagogical practices introduced. One institution wrote “… COVID-19 is an exceptional circumstance, and our academic regulations which catered for such circumstances, have had to be modified due to the duration and uniqueness of the crisis”. The policy measures included provision for late submission of assessment work; alteration in duration of academic year; and provision for change in mode of assessments—all aimed at reducing detriment to students.

5.3.2. Academic services-related interventions
Figure 2 further shows the interventions implemented in response to the COVID-19 impact on academic services. Systems and media of communication to convey messages about COVID-19 protocols and about personal safety and wellbeing were key interventions introduced in all (100%) the colleges and universities. In addition, 91.4% of colleges and universities introduced virtual induction to welcome new students—perhaps to ensure social distancing. Fewer (25.7%) introduced webinar events, instead of in-person conferences, to afford academics the opportunity to continue engaging with colleagues in the academic community as they observe health and social distance protocols.

Three of the institutions also indicated in written statements that they have had to withdraw students on work placement or attachment from the industry to protect their safety and have had to engage the Professional, Statutory and Regulatory Bodies (PSRBs) which govern the professional education curriculum, to switch student examination invigilation format from in-person to remote invigilation.
6. Discussion

The study investigated the influence of the COVID-19 crisis on pedagogy and academic services in colleges and universities, using Botswana as a context. It was clear from the findings that the COVID-19 outbreak had a negative impact on pedagogical practices. It also had a negative influence on academic services across the majority of the institutions. The impact was multidimensional, encompassing disruption to academic programmes, especially those that have job placement and practical laboratory work as part of their design requirements, coursework submission, and planned assessments. The areas impacted were consistent with the literature as authors in other countries cited similar issues and concluded that the COVID-19 crisis caused unparallel stress on academics and students (Alex, 2022; United Nations, 2020; World Bank, 2020). Institutions using the same mode of study prior to the COVID-19 crisis may account for the comparable impact across pedagogical and service areas in the organisations.

The results further showed that academic services were negatively impacted, particularly in key areas of student recruitment, enrollment planning, and communication with current and prospective students. As past studies have illustrated (Hirsch, 2011; TalentCulture, 2020), breakdown in communication evoked negative emotions—leading to experience of uncertainty among the academic leaders. Deep concerns about the future of their institutions and about their university or college reputation and the prospect of recruiting students for the next academic year as well as fear about their own health and the health and wellbeing of their staff may have accounted for the negative emotions and uncertainty that academic leaders reported (Shamsir et al., 2021). Collectively, student recruitment, enrollment, and public communication are at the core of university administration and management function (Brown & Irons, 2022). University leaders feel in control when they can have their pulse on these core areas of institutional administration. However, the pernicious effects of COVID-19 spreading globally appear to have displaced the leaders from the control they enjoyed all these years under normal condition, and their weakened capacity to understand and speedily resolve the problems at the local level of the institution may have revealed both their “blind-spots” and limits in their manoeuvrability (Agasisti & Soncin, 2021). These factors are powerful enough to evoke uncertainty and negative emotions in academic leaders. Since this study found that no contingency plans were in place to respond to the scale of the COVID-19 problems, shortcomings in the management practices of the academic leaders were clearly exposed, and as Shamsir et al. (2021, p. 2) emphasise, the pandemic took the lip off “The lack of clear planning frameworks and strategies for pandemic preparedness by institutions of higher education…” Contingency plan reduces the chance of total disruption and uncertainty (Fernandes & Gama, 2014; Garcia & Weiss, 2020; Owusu-Fordjour et al., 2020).

Another key finding that warrants highlighting in this study is that a number of public universities and colleges closed their operations throughout the period of the planned and sporadic lockdowns largely because they had no digital learning response to prevent learning discontinuity. Although a lack of reliable internet infrastructure, as well as limited financial resources to procure devices for students to get access to education, may account for the decision (Moakofi et al., 2017; Mooko, 2022), the revelation brought to light another dimension that is not frequently talked about in higher education administration and management, i.e., the manner in which university or college bureaucracy is coupled. The bulk of the higher education literature, particularly the aspect that has been entrenched in Anglo-American theorisations, has portrayed institutions of higher learning as loosely coupled (Weick, 1976), with functional units that are responsive, yet possess distinct identity, goals, and logical or physical disconnectedness—despite being part of a whole (Fernandez & Shaw, 2020; Oleksiienko et al., 2022). This view of the university or college gives the impression that response in a crisis can be delayed by institutional forces beyond managerial control. On the other hand, Spillane et al. (2011) and Meyer (2002) take the view that some institutions can be tightly coupled as evidenced in managerialism practices (Meyer, 2002). Since public institutions are often perceived as loosely coupled and complex, and behaviour in loosely coupled vs. tightly coupled contexts can show shifting forms of agency and culture (Oleksiienko et al., 2022), the response to close campus and validate learning discontinuity may be a result of
particular agency and culture (e.g., politics and collegiality) at play—divided according to Marginson and Rhoades (2002) along line of institutional agency and human agency.

While the COVID-19 crisis disrupted teaching, learning and support services, the study further found that the impact was significantly associated with certain institutional characteristics. This study revealed that the impact was mediated by institutional ownership arrangement (i.e., public vs. private), institutional size in terms of student numbers, institutional handling of new student admission, and the choice of pedagogical approach in the academic year subsequent to the outbreak of the pandemic. Mitroff (2020) admits that the management of crisis is a complex matter often influenced by divergent agencies and structures in a college or university. One expects that in a crisis both public and private colleges and universities would undertake prompt actions and interventions to curtail the COVID-19 crisis, but we can see from this study that the impact of the crisis and the leaders’ approaches to managing it were different. Public colleges and universities, which are traditionally loosely coupled, encountered more challenges in both grasping and implementing solutions to the educational problems due to entanglements in governmental regulations as well as resource deficiencies—resulting in greater learning time loss. Private institutions, and institutions that were large (i.e., more 3000 students) had less tolerance for business uncertainty, ambiguity, and risk-taking, particularly when meeting enrollment targets. Hofstede (1980) maintains that institutions that display these traits are likely the first to take steps to minimize the unknown variables. Profit motives had a bearing on the responses of private institutions to mitigate the impact. However, it is ironic that neither the public nor private universities or colleges had a process of crisis management in place prior in order to deal with the impact of the COVID-19 crisis (Belford, 2021; Daly, 2022). The unprecedented and wicked nature of the pandemic, whose magnitude has been outside the scope of any emergency in recent memory (UNESCO, 2020), may account for the absence of an emergency plan.

As expected, institutions that manage their information systems manually were the most affected by the lockdowns and student displacements off-campus. One of the reasons is that information in hard copy format was difficult to access, track, and use from off-campus facilities and locations. The periods of sudden disruption taught academic leaders in both the public and private colleges and universities of the benefits of investing in information communication technologies and the Internet. Prior to the COVID-19 outbreak, the complaint has always been the cost of the infrastructure. Goryainova et al. (2017) have advocated for social partnerships to fund education in a knowledge driven economy, and research findings about communication breakdown, such as those reported above, convey vital implications for reforming systems of communication in private colleges/universities.

A considerable amount of effort has been made to respond to the COVID-19 impact on teaching, learning, and academic services. The responses were evidently guided by pragmatism as indicated by interventions such as reducing class sizes of face-to-face teaching and learning engagements, and the roll out of hybrid or blended mode of learning in a few institutions. However, one glaringly missing intervention is the plan to recover learning time loss. None of the institutions mentioned learning loss recovery to minimize learning gap or deficiencies. The absence of intervention to close gaps in learning and to safeguard against student dropout is inconsistent with the literature, which shows a raft of emergency measures focusing on recovering learning as a priority (Brown & Irons, 2022; OECD, 2020; United Nations, 2020; World Bank, 2020). The measures taken in the colleges and universities investigated, while pragmatic, amidst the wave of the pandemic, included altering the university academic calendar, adjusting academic policies and regulations to mitigate student detriment arising from the crisis, accommodating changes in student work placement or attachment, changing mode of study to online platforms (where feasible), and communicating more widely about COVID-19 prevention and safety has overlooked the vital issue that time lapse occurred without learning engagement and it requires intervention to close any deficiencies in student learning (Brown & Irons, 2022).
7. Implications for development

Mitroff (2020, p. 270) stated that COVID-19 was the wickedest mess that he had ever seen—reflecting a point in time when dissimilar forces interacted in “strange and unpredictable ways”. If we placed Mitroff’s sentiments in the context of institutions of higher learning, one could argue that COVID-related impact on teaching and learning as well as support services is a vicious phenomenon within human development. In the bureaucracy of higher education organisations, the absence of crisis management contributed to the severe negative impact on specific areas of pedagogical practice and academic services. While the wickedness of the COVID-19 virus rages on, the damage it has already caused to the generation of students who are participating in the higher education systems, and to the society in which they will eventually graduate and live, is devastating when further viewed and appraised through the lens of economic and human development.

Learning loss poses the biggest risk for both human and economic development. Learning time loss connotes that knowledge decay has occurred over the period of inactive learning engagement, and that curriculum coverage for students to develop the requisite knowledge and skills to achieve the planned learning outcomes and competencies should still occur (Brown & Irons, 2022). Both of these dimensions of education require careful planning (Oleksiyenko et al., 2022), and the failure to get students to recover in this area of their education carries far-reaching consequences for the student and the society (Aina & Casalone, 2011; OECD, 2020). Studies on the economics of education (OECD, 2020) illustrate that life income increases by between 7.5% and 10% on average with each additional year of higher education. A loss of a proportion of a semester’s worth of learning in an academic year decreases the subsequent earned income potential of the graduates by up to 3%, according to an OECD study (OECD, 2020). Botswana’s, as the rest of Africa’s, economic development is linked closely to graduates timely joining the labour market, adequately trained and with appropriate skills (ADB, 2021; Brown & Irons, 2022). Government decision makers and college and university leaders are obligated to combine efforts to find measures that can allow the cohort of higher education students that have lost learning time since 2020 to catch up educationally, thereby mitigating the potentially lower-income earnings among these graduates.

Another economic development issue that makes finding a solution to the university and college student learning loss challenge more urgent is the link between skills and national economic growth. The OECD (2020) research shows that the loss of less than a semester’s worth of learning in an academic year for only the students impacted by the lockdowns or closure of the higher education institutions can have a ripple effect on a country’s GDP throughout the rest of this century. It implies that the loss of learning time could lower Botswana’s GDP, on average, by as much as 1.5% through this century (OECD, 2020). As Belford (2021) reiterates, “mind the gap” is a clear message to education decision makers in Botswana to mitigate long-term economic development problems arising from the current COVID-19 crisis in higher education. The onus is university and college leaders to evaluate the magnitude of the learning time loss and the skills and knowledge gaps and to develop the appropriate interventions, under the monitoring of the qualification authorities, in order to safeguard the country’s future economic well-being.

Furthermore, participation in, and completion of, higher education within a certain timeframe is an indicator of human development and progress (Aina & Casalone, 2011; Yadav et al., 2022). As past research has shown, the COVID-19 crisis pushed a number of students out of higher education either due to personal illnesses and the requirement to care for sick family members, or as a result of the inability to afford the resources for digital learning in the institutions that made the switch to technological platforms (Alex, 2022; Kajee, 2022; Oleksiyenko et al., 2022). The crisis also hindered the admission of some prospective students who had intentions to join the higher education system not just in the year that the virus was declared a pandemic in African countries but in the subsequent year(s). In the grand scheme of human development index measurement, the time that university or college students take to obtain their degrees matter (Aina & Casalone, 2011; OECD, 2020). Delayed graduation has an effect not just on employment and wages but also on skills availability to the labour market and to society (OECD, 2020). The more serious aspect of a delay
in college or university completion, particularly for students who take longer to finish due to frequent academic underperformance and failure, dropping out and returning, and repetition of certain year of study—triggered by mental health problems—is that it wastes resources and robs the labour market of relevant competencies (Aina & Casalone, 2011). In these situations, the student is disadvantaged because of partially obsolete skills, but also because of employer discrimination when assessing the individual based on experience and the time taken to complete the qualification.

8. Implications for higher education
The evidence that emanated in this study highlights key informal theories about COVID-19 impact and responses in the higher education context. If extrapolated outside the study context, they can be starting points of further study. But more crucially, they can contribute to human development in terms of informing development policy, especially as it relates to teacher professional development on post-COVID-19 learning scenario, blended learning, and enhancing their technical competency. Training university and college academics on diagnosing learning gaps based on the loss of learning time and supporting them to develop appropriate interventions to recover the learning is one example of an avenue for professional development. The same could also be done in respect of getting academic leaders to understand the level of coupling of the bureaucratic organisation that they lead. Loosely coupled and tightly coupled university or college environment has a bearing on crisis management planning and response (Brown, 2022a; Brown, 2022b). The COVID-19 crisis has opened up this area of focus as an avenue for possible training and development for vice-chancellors and principals. University or college leaders should also consider various enrollment planning models and focus on models that give allowance for shocks in the planning process. Likewise, it will be critical for these leaders to fully understand the root causes of breakdown in communication with prospective students. Professional development can focus on these areas so that leaders can identify pitfalls and risks and plan for the reform of infrastructure (technological and otherwise) and for contingency plan development.

Without a robust contingency plan, university/college will be ill-prepared to respond to, and provide quality education in, periods of emergency, especially those of the magnitude and duration of the COVID-19 pandemic. Contingency planning for teaching and learning and the provision of academic services should become a prerequisite item in university/college quality assurance system to assure learning continuity and mitigate learning loss. Professional development could be around different models of contingency planning, as Daly (2022) and Garcia and Weiss (2020) identified. Leaders have an obligation to plan for future crises across. A commitment to make contingency planning mandatory is also needed as part of crisis and risks management in higher education (Andersen, 2003; Brown & Mooketsi, 2018).

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There is no competing interest to declare. The views expressed in this study are those of the authors, except where citations are acknowledged in references.

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