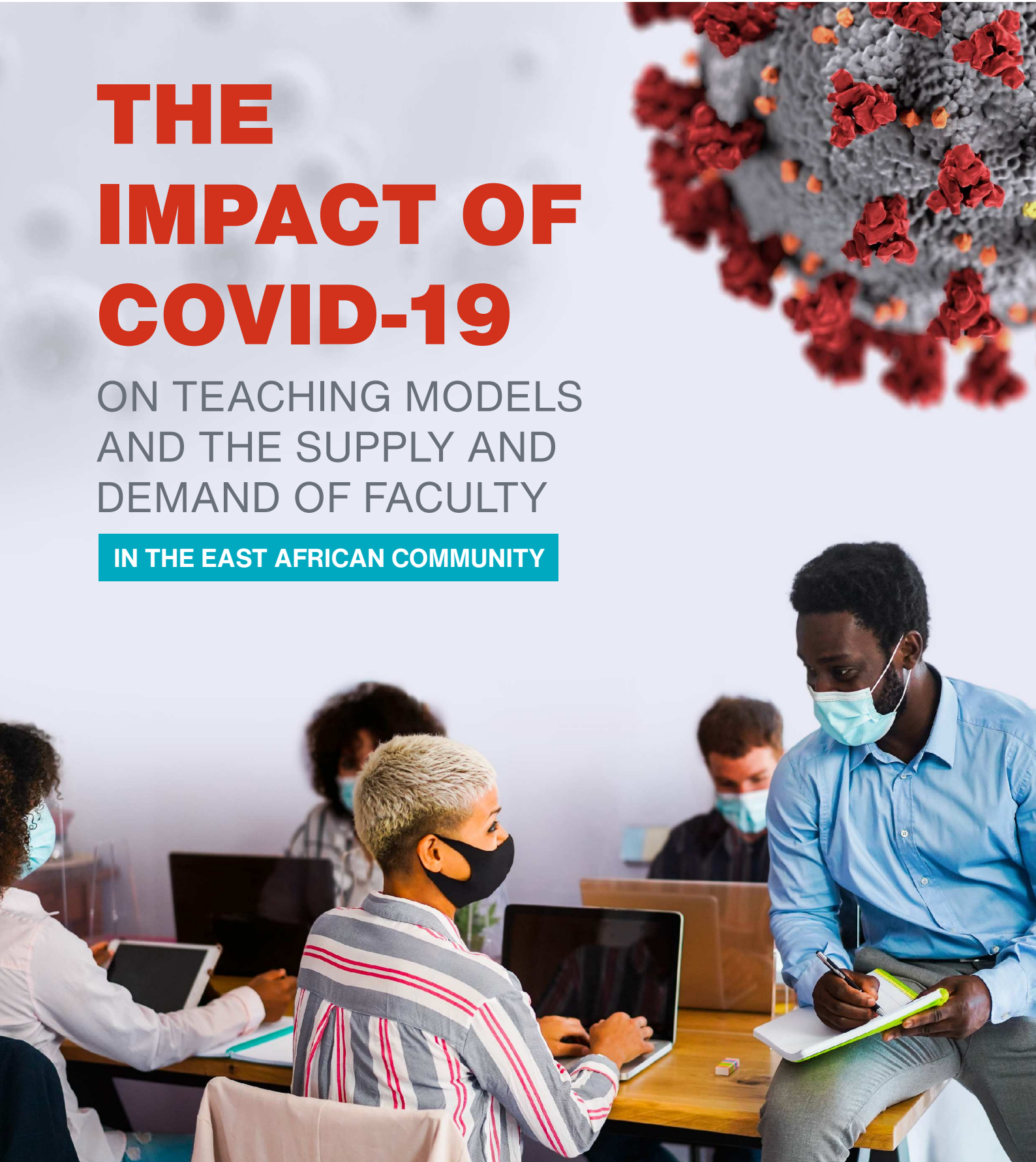




THE IMPACT OF COVID-19

ON TEACHING MODELS
AND THE SUPPLY AND
DEMAND OF FACULTY

IN THE EAST AFRICAN COMMUNITY



Published by:

Education Sub Saharan Africa

Twitter: @essa_africa

Website: www.essa-africa.org

Inter-University Council for East Africa

Website: www.iucea.org

Email: info@iucea.org

Suggested citation:

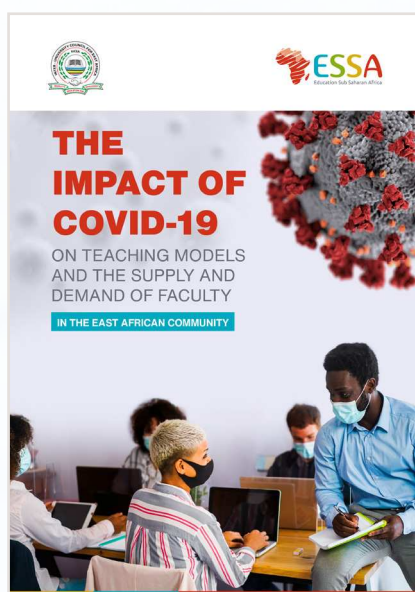
Mbithi, A., & Guchu, S. (2023). The Impact of COVID-19 on Teaching Models and the Supply and Demand of Faculty in the East African Community. Education Sub Saharan Africa (ESSA) and Inter-University Council for East Africa (IUCEA). Research Report.

Graphic design and layout by:

Daniel Kamau

About the Report

This report was prepared by Education Sub-Saharan Africa (ESSA) based on data whose collection was funded by the Inter-University Council for East Africa (IUCEA). The author is Antony Mbithi (ex-Research Manager) in collaboration with Salome Guchu (Principal Innovation and Outreach Officer). We would like to thank Mike Kuria, Pauline Essah, Laté Lawson, Samuel Agyapong, Samuel Asare, and Joash Migosi for their invaluable input. For further information about the report, please contact Pauline Essah via pauline@essa-africa.org or Salome Guchu via sguchu@iucea.org.





About ESSA



ESSA is a charity founded in 2016. Our vision is high-quality education that enables young people in sub-Saharan Africa to achieve their ambitions and strengthens society. ESSA's mission starts with universities and colleges. Driven by the needs of young people, we join up leaders (e.g., educators, funders, policymakers) and provide them with the data and evidence they need to make good decisions and to change the system. ESSA offers:

- a strong, African team and board based in Africa and Europe, blending experience in research, mapping, knowledge management, advocacy, and communication;
- a unique position in African tertiary education, via a proven record of accomplishment in researching important educational issues in sub-Saharan Africa, and delivering practical and innovative solutions;
- well-established research and dissemination partners and networks for tertiary education (e.g., the Inter-University Council for East Africa, All-Africa Students Union, Association of African Universities, Decent Jobs for Youth, Ghana Tertiary Education Commission, Population Reference Bureau, Quilt.AI, UNESCO, UNHCR and Zizi Afrique Foundation, among others); and,
- strong values that guide everything we do. We are evidence-driven, solutions-focused, we strengthen trust, and we are always learning.

For further information about the organisation, please contact

Pauline Essah

Director of Research and Programmes
pauline@essa-africa.org

Lucy Heady

CEO
lucy@essa-africa.org

About IUCEA



The Inter-University Council for East Africa (IUCEA) is a strategic institution of the East African Community (EAC), responsible for coordinating the development of higher education and research in the region. After having been recognised as the surviving institution of the former EAC (1967 – 1977) responsible for coordinating the networking of university institutions in the region, since the re-establishment of EAC in 1999, IUCEA has assumed a broader role as a building block for the achievement of sustainable socio-economic development and regional integration of the EAC region. In that regard, the current mission of IUCEA focuses on encouraging and developing mutually beneficial collaboration between Member Universities and between them and Governments and other organisations, both public and private. The goal of IUCEA is to respond to the expectations of the EAC Partner States in terms of higher education institutions producing high-level human resources and research output that can promote and sustain socio-economic development and regional integration.

For further information about the organisation, please contact

Salome Guchu

Principal Innovation and Outreach Officer
sguchu@iucea.org



Contents

Glossary	7
Executive Summary	8

1

Introduction	14
---------------------	-----------

2

Methodology	16
--------------------	-----------

3

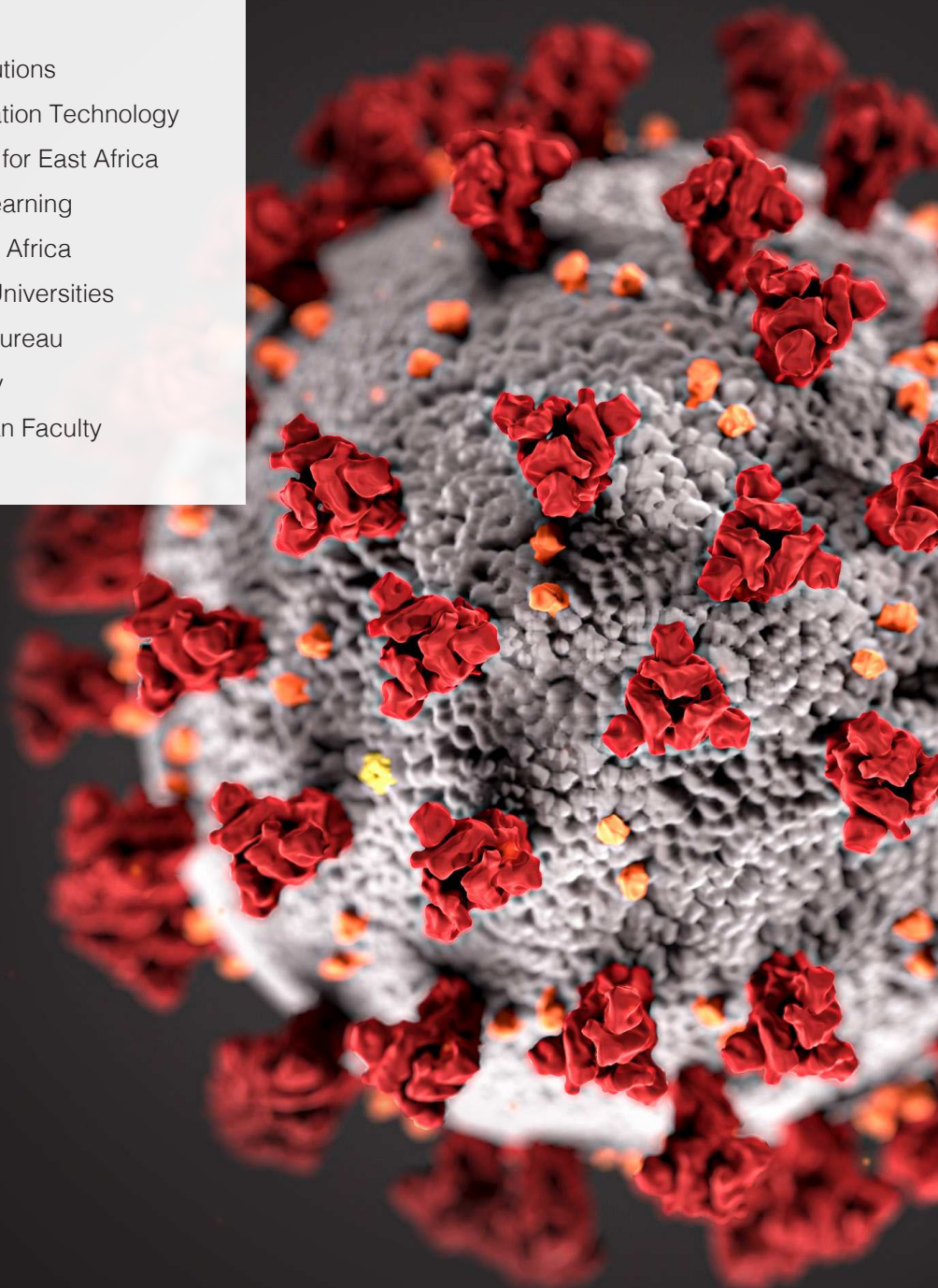
Study Findings	18
3.1 Transition to eLearning	18
3.2 Teaching models	20
3.3 Mode of delivery	23
3.4 Faculty employment	24
3.5 Salary and benefits	26
3.6 Faculty challenges to eLearning	27
3.7 Institutional response to eLearning challenges	28
3.8 Faculty workload	29
3.9 Perceptions on eLearning	30
3.10 Administration of exams	32
3.11 Integrity of online exams	34
3.12 Online exams training	36
3.13 Research during the COVID-19 pandemic	38
3.14 Determinants of research during COVID-19	39
3.15 Challenges to career progress	40
3.16 Mental health	42
3.17 Student enrolment	44
3.18 International students and exchange students	46

4

Conclusion	48	References	49
		Appendices	50
		Analytical Framework	50

Glossary

SSA	Sub-Saharan Africa
HEIs	Higher Education Institutions
ICT	Information Communication Technology
IUCEA	Inter-University Council for East Africa
ODeL	Open Distance and eLearning
ESSA	Education Sub Saharan Africa
AAU	Association of African Universities
PRB	Population Reference Bureau
EAC	East African Community
DAF	Demographics of African Faculty





Executive Summary

This report has been prepared by ESSA and IUCEA to feed into a study about the Demographics of African Faculty (DAF) in the East African Community (EAC). The report presents the effects of the COVID-19 pandemic on faculty in the EAC. The DAF EAC project is being undertaken by an international consortium comprising the Inter-University Council for East Africa (IUCEA), Education Sub Saharan Africa (ESSA), the Association of African Universities (AAU), and the Population Reference Bureau (PRB) through funding from Carnegie Corporation of New York (grant number G-21-58066).

The evidence and insights in this report, regarding the impact of COVID-19 on teaching models and the supply and demand of faculty in the EAC, are intended to be useful for tackling faculty challenges in the EAC region. It will help the consortium to refine its methodology for engaging with higher education stakeholders (such as institutional leaders and policymakers) to identify and/or co-create innovative solutions to address the faculty challenges exacerbated by the pandemic, and to embrace new opportunities presented by the pandemic.

In March 2020, most governments in the EAC suspended in-person activities, including those of Higher Education Institutions (HEIs), to stop the spread of COVID-19.

The COVID-19 pandemic occurred at a time when HEIs and stakeholders in the education sector had been employing different strategies to address faculty challenges and transform higher education in SSA. The closures led to the adoption of different teaching models such as distance, online, and or blended learning to continue teaching and learning. Nevertheless, this shift occurred with little to no preparation in skills and infrastructure (IUCEA, 2021). To help achieve our objective, ESSA and IUCEA conducted a quantitative analysis using data from a survey commissioned and funded by the IUCEA from 12 April 2021 to 14 June 2021, with support from ESSA. The survey documented experiences of HEIs and faculty members in the EAC region during the COVID-19 pandemic.



From the sampled respondents, the analysis observed the following:

1 Across the region, most HEIs experienced challenges transitioning to eLearning due to a lack of Open and Distance Learning (ODEL) policies and resources. As a result, faculty and students experienced inadequacies related to skills capacity, internet connectivity, and access to Information Communication Technologies (ICT) equipment/facilities, hence were reluctant to transition – as detailed in **section 3.1**.

2 Some HEIs responded to the challenges by effecting a range of measures including downward adjustment of salaries, designing long distance learning programmes, negotiating with suppliers for rescheduling of payments, negotiating for internet bundles with service providers, training faculty and students on eLearning, and forming COVID-19 crisis committees. More information is presented in **section 3.2**.

3 In the wake of the pandemic, Tanzania and Burundi had a SIGNIFICANTLY high proportion of in-person classes across the region at



54%
Tanzania



28%
Burundi



However, regarding the new teaching models across the region,

24%
of the HEIs
adopted
eLearning,

7%
distance
learning,
and

44%
blended
learning,

with Burundi and Tanzania having a low uptake of the new teaching models. See **section 3.2** for more information.

4 Across the region, the study found that countries and HEIs that trained their faculty on the adoption of eLearning and provided their faculty members with internet, increased the probability of their faculty using eLearning and blended learning approaches– as detailed in **section 3.2**

5



On average across the EAC,

45% of the study's faculty respondents
remained permanently employed, and

9% were on a contract basis.

Kenya had the lowest faculty members who remained permanent at **43%** as presented in **section 3.4**.

6



Only half of the study's faculty respondents in Kenya and Tanzania were paid their salaries on time.



In Uganda, this accounted for **17%**

Also, Ugandan faculty members experienced the highest pay cuts, reduced benefits, and their benefits were not remitted on time. See **section 3.5**.

7

Except for Burundi and Tanzania, which averaged at



the other countries embarked on training their faculty on eLearning.

Uganda stands out in provision of internet bundles to faculty members at



with the region average being **21%**

See **section 3.7** for more information.

8

On average, EAC faculty reported increased workload (lecture hours) by

32%



with Rwanda leading by **53%**

as presented in **section 3.8**.

9

Faculty members in Kenya, Rwanda, and Tanzania reported spending more time preparing and teaching. However, overall, faculty members did not feel that eLearning was cumbersome

faculty members thought that eLearning was ineffective by



47%

in Rwanda and



38%

in Uganda

The regional average was **31%**. More information is presented in **section 3.9**.

¹The numbers of faculty by age, gender, field/department, role, and rank

²This report uses the term "faculty" to refer to academic staff

10



On average, only a small percentage (16%) of exams were administered online.

However, Rwanda and Uganda offered most of their exams in a blended format by



Tanzania’s lack of strict lockdowns resulted in most of their exams being administered in-person. This is explained in **section 3.10**.

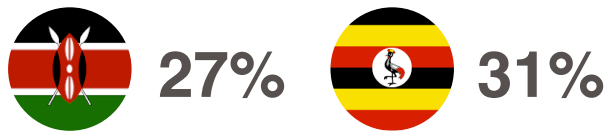
11

The probability of online exams systems failure was increased by HEIs’ lack of preparedness for online exams and lack of internet access. However, training students and faculty on eLearning decreased the probability of exam failure by **29 percentage points**, as explained in **section 3.11**.

12

The probability of HEIs having difficulty conducting exams online and upholding exam integrity increased by the lack of and/or unstable internet connection as such occurrences made it difficult to monitor what was happening during the exams. Lack of stable internet also increased the likelihood of marking of online exams becoming cumbersome.

From our sampled respondents, across the region, Kenya and Uganda had the highest number of HEIs who had difficulty upholding the integrity of online exams by **27% and 31%**,

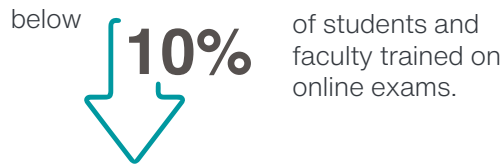


respectively, against a regional average of **24%**. More information is presented in **section 3.11**.

13



Across the region, Burundi and Tanzania had the lowest numbers



Furthermore, all countries in the region had little to no equipment to ensure the integrity of online exams, as presented in **section 3.12**.

14

Across the EAC, more than



of faculty members did not conduct research during the pandemic

less than



published

less than



of research projects got suspended

15

Faculty research was reduced across the region due to the intensive work involved in eLearning, lack of research funds, suspension of research projects, and gender roles, especially for female faculty members. In addition, the probability of publishing during the pandemic was reduced by intensive work involved in eLearning and lack of research funds. This is discussed in more detail in section 3.14.

16

On average,

18%

of the faculty across the region did not attend personal development meetings,

11%

feared retrenchment, and

20%

had their research funds reduced.

The pandemic delayed faculty promotion by **9%** across the region and **24%** in Rwanda. Some faculty relocated to the rural areas due to the high cost of living, and **50%** of the faculty respondents in Uganda reported financial difficulties in providing for their families, with most of them venturing into alternative sources of income. This is explained in **section 3.15**.

17

On average, 14%



of faculty members in the region reported having experienced depression. Uganda reported the highest levels of loneliness.

However, only



of faculty in the region attended counselling services. More information is presented in **section 3.16**.

18

Across the EAC, there was a reduction in student enrolment, especially in Kenya, Rwanda, and Uganda. Kenya had the highest decrease in international student recruitment.

Also, on average,

23%

of international students in the region suspended their studies. Furthermore, Kenya and Uganda led in suspending exchange programs – as presented in **sections 3.17 and 3.18**.



1. Introduction

Approximately 98% of tertiary level students — 8.4 million, were out of school in sub-Saharan Africa (SSA) at some point during the COVID-19 pandemic (World Bank, 2020). In March 2020, most governments in the EAC suspended in-person activities, including those of Higher Education Institutions (HEIs). At the onset, most HEIs did not have Open Distance and eLearning (ODEL) policies and adequate ICT infrastructure. Additionally, faculty members and students have had to grapple with modern technologies, changes in lifestyles, and livelihoods. These have negatively impacted faculty members' physical and mental health as they cope with confined lives during the pandemic, which may further negatively impact the quality of education students receive in the region (Idris et al., 2021).

The economic shutdowns have also led to revenue shortfalls resulting from low student enrolment, defaults in payment of fees, and or reduction in government funding of HEIs. This may have affected faculty recruitment, retention, and development. In addition, the magnitude of these challenges by region, country, and gender is poorly understood. Despite these challenges, the pandemic has brought in new opportunities that necessitate policymakers

and other education stakeholders to rethink how to effectively deliver quality tertiary education in an inclusive and equitable manner, and the role of technology as a key enabler. To capitalise on these new opportunities, knowledge of the magnitude of the pandemic's challenges by region and country is needed for effective planning and response.

Also, despite this myriad of challenges, the pandemic has required higher education stakeholders to rethink the use of technology in delivering quality higher education inclusively and equitably. Therefore, a clear understanding of the scale and nature of the faculty challenges is vital in planning and implementing an effective response to counter these challenges. Subsequently, the evidence and insights in this report will be useful for tackling faculty challenges in the EAC region. It will help the DAF EAC consortium refine its methodology for engaging with higher education stakeholders (such as institutional leaders and policymakers), identify and/or co-create innovative solutions to address the faculty challenges exacerbated by the pandemic, embrace new opportunities presented by the pandemic, and inform IUCEA's Higher Education Information System (HEIS).

An approximate

8.4million

of tertiary level students were out of school in sub-Saharan Africa (SSA) at some point during the COVID-19 pandemic (World Bank, 2020).



2. Methodology

The study utilised a survey commissioned by IUCEA and ESSA that documented experiences of HEIs and faculty members in the EAC region during the COVID-19 pandemic. The respondents included Ministry of Education officials (Director of Education), HEI regulatory bodies (CEOs of Commissions of Higher Education), managers of HEIs (Vice-Chancellor or Principal), faculty and administrative staff (Registrar), and students.

The survey's sample consisted of 133 HEIs, both public and private, that are members of the IUCEA as presented in Table 1 below. It is important to note that private institutions were almost double the number of public institutions respondents. From each institution, data was collected from the Vice-chancellor or Principal, faculty, administrative staff, and students. The level of analysis is at the institutional level across countries.

The study was approved by The Daystar University Ethics Review Board (DU-ERB). Participants provided informed consent with knowledge that their participation was voluntary, and the personal information would remain confidential to the research team.









Country	Number of IUCEA Member HEIs		Total
	Private	Public	
 Kenya	19	18	37
 Uganda	21	9	30
 Tanzania	19	14	33
 Rwanda	16	1	17
 Burundi	9	5	14
 South Sudan	1	1	2
	85	48	133

Table 1: IUCEA Member HEIs

The survey was carried out online from 12 April 2021 to 14 June 2021. Most of the countries in the EAC had instituted COVID-19 pandemic containment measures except for Burundi and Tanzania. A total of 1,658 respondents participated, translating into an average completion rate of 52% of the

total respondents. The percentage composition of respondents across categories is presented in Figure 1 below, where student and faculty/administrative staff constituted over 90% of respondents.

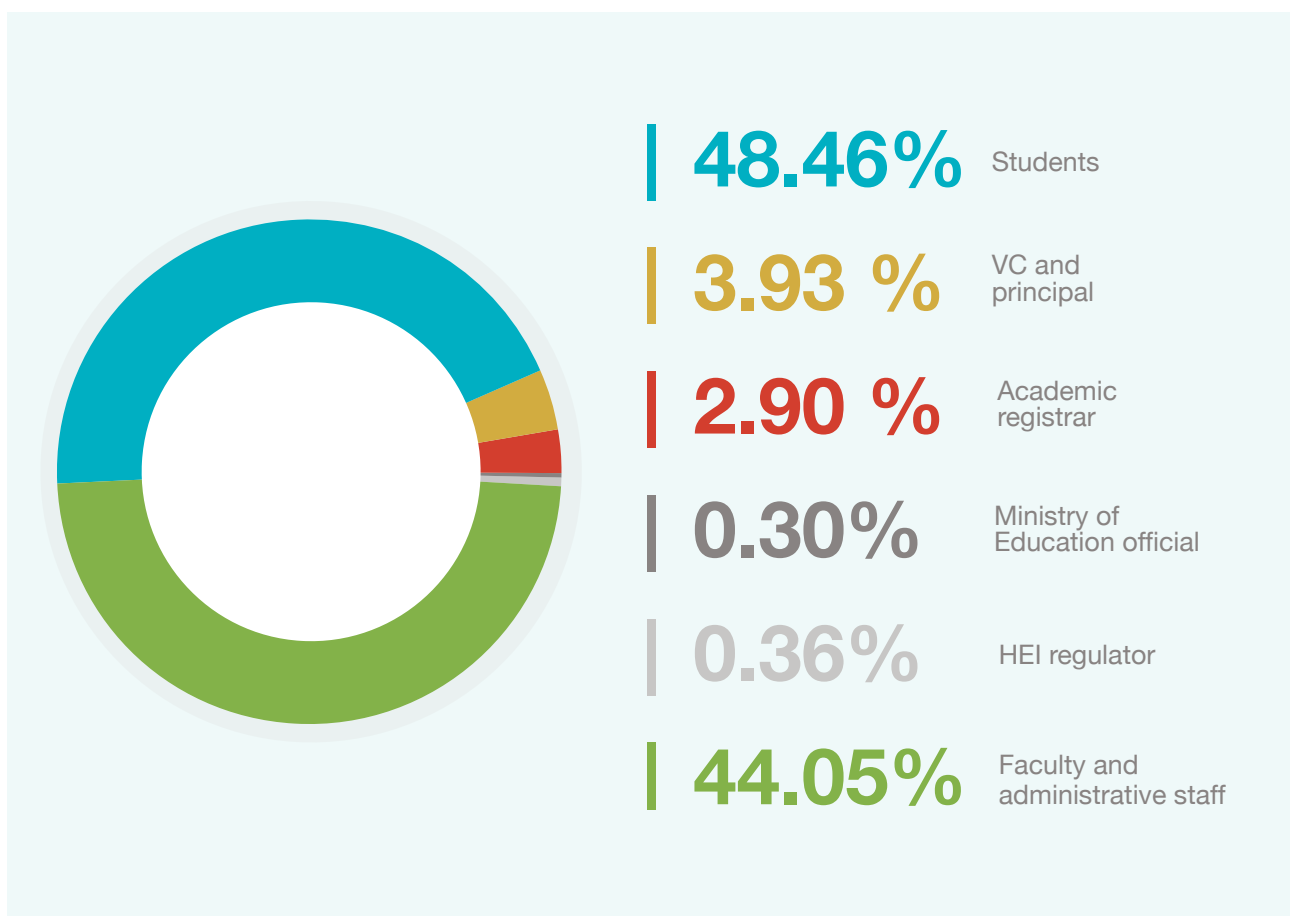


Figure 1: Respondents distribution across categories

In analysing the primary data, the study employed descriptive statistics and probability regression models (probit)³ to assess the impact of COVID-19 on teaching models, and supply and demand of

faculty in the EAC. We present the marginal effects in figure 4, which show the change in probability when the predictor or explanatory variable increases by one unit.

3. Study Findings

This section presents the study findings from the primary survey data.

3.1 Transition to eLearning

Across the region, most HEIs experienced challenges transitioning to eLearning. In Table 2, the study finds that on average across the region, some of the challenges included lack of ODeL policies (50%); lack of skills; connectivity; equipment to transition

by students (63%); faculty's lack of eLearning skills, internet connectivity, and equipment to transition to eLearning (38%); and reluctance to transition by faculty (19%) and students (47%).



Immediate challenges hampering HEIs transition into eLearning



Several HEIs reported being in some financial distress due to the pandemic. 26% of HEIs reported being in significant financial distress, and 61% being in slight financial distress. The financial distress led to delayed payments to suppliers (51.6%), delayed salary payments (29%), non-remittance of statutory

deductions (35.48%). Only 22.58% of the sampled HEIs succeeded in meeting their financial obligations on time during the pandemic, and most were forced to review their budgets, infrastructural development plans, and strategic plans (IUCEA, 2021).

³ Having binary outcomes, a probit model estimates the probability a value will fall into one of the two possible binary outcomes. Ordinary Least Squares (OLS) and Linear Probability Models (LPM) violates several assumptions of OLS regression and results from hypothesis tests will be invalid (Long, 1997). The model is presented in the Appendices.

⁴ Tables of regression results are in the appendices.

HEIs response to the above challenges included downward adjustment of salaries to stay afloat; designing long distance learning programmes; negotiating with suppliers for rescheduling of

payments (4%); negotiating for internet bundles with service providers (12%); training faculty and students on eLearning (16%); and forming COVID-19 crisis committee (16%) as shown in Figure 2 below.

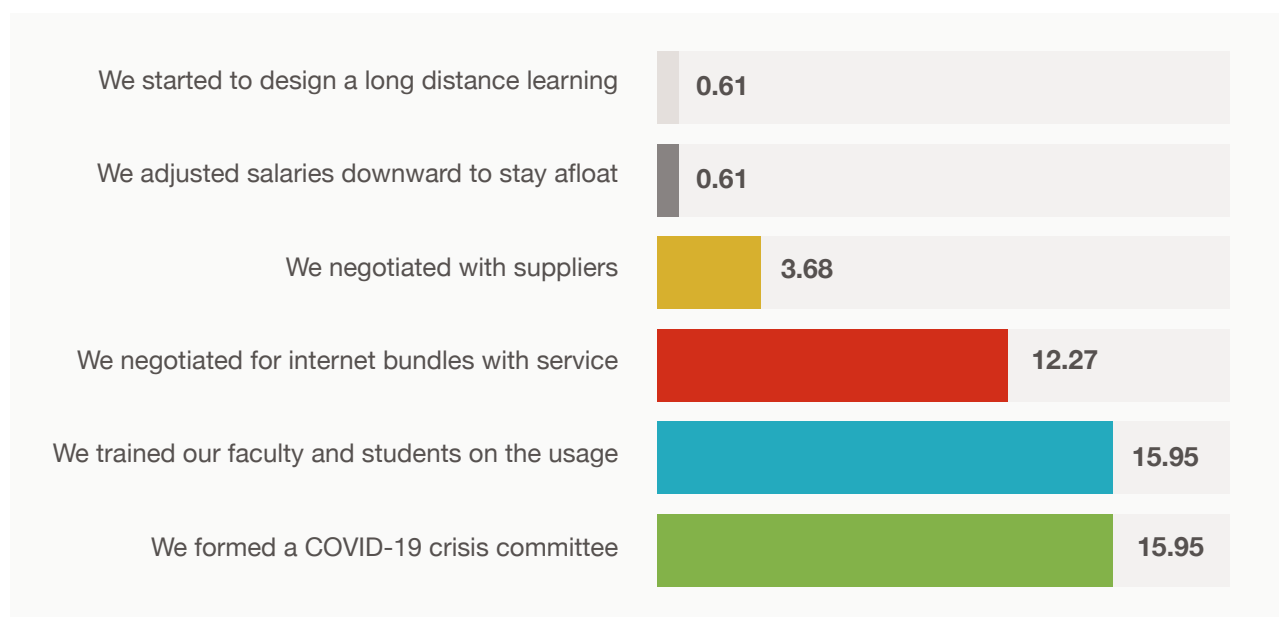


Figure 2: Response by Heads of HEIs

3.2 Teaching models

A teaching model is a plan or pattern that is used to shape curriculum, design instructional materials, and guide instruction in the classroom or in other settings (Joyce, Weil, and Calhoun 2003). Before the COVID-19 pandemic, most HEIs used the in-person teaching model. This is a model where the learner and the instructor are physically present in the classroom. Few institutions used distance learning, which is a method of instruction where the learners are not physically present in school and the lessons are either broadcasted or conducted by correspondence.

During the COVID-19 pandemic, HEIs started to adopt distance learning and eLearning: formalised teaching which takes place in or out of the classroom with the help of electronic resources. Lastly, as some

disciplines such as medical sciences cannot solely be conducted online or through distance learning, some HEIs therefore adopted blended learning. In this model, the students learn through eLearning platforms as well as traditional face to face teaching.

In the wake of the pandemic, except Tanzania and Burundi, most of the countries in EAC went into a complete lockdown. This meant that HEIs had to find new teaching models. In Figure 3, the study finds that more than half of classes in Tanzania were in-person, followed by Burundi at 28%. The rest of the countries averaged below 20%. On average, 24% adopted eLearning, 7% distance learning, and 44% blended learning with Burundi and Tanzania having a low uptake of the new teaching models.

⁵ Due to small sample size and low statistical power, we excluded South Sudan from our analysis.



Figure 3: Teaching models during the pandemic



Across the region, the study finds that HEIs that trained their faculty on the adoption of eLearning and provided their faculty members with internet, increased their probability of using eLearning and blended learning by 15 percentage points and 31 percentage points respectively, as shown in Figure 4.

In addition, HEIs that provided their faculty with internet bundles increased their probability of eLearning and blended learning by 11 percentage

points and 24 percentage points, respectively.

'Gender' was not a determinant in institutional support in adopting eLearning and blended learning. However, the sign on the gender coefficient is negative and may indicate that being a woman decreases the probability of eLearning adoption. However, we acknowledge that the results may not be the apparent causal effect, as there may be other confounding factors.

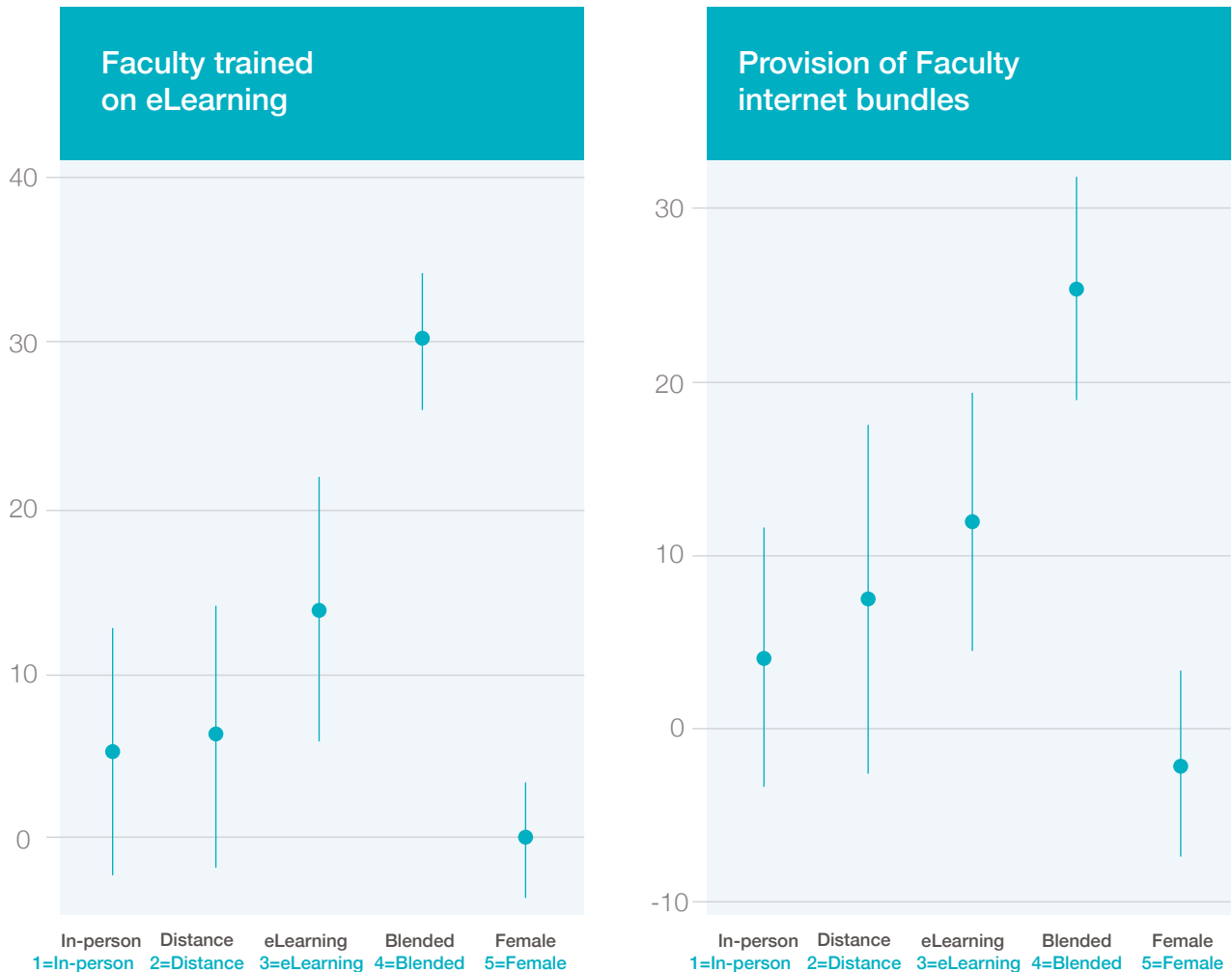


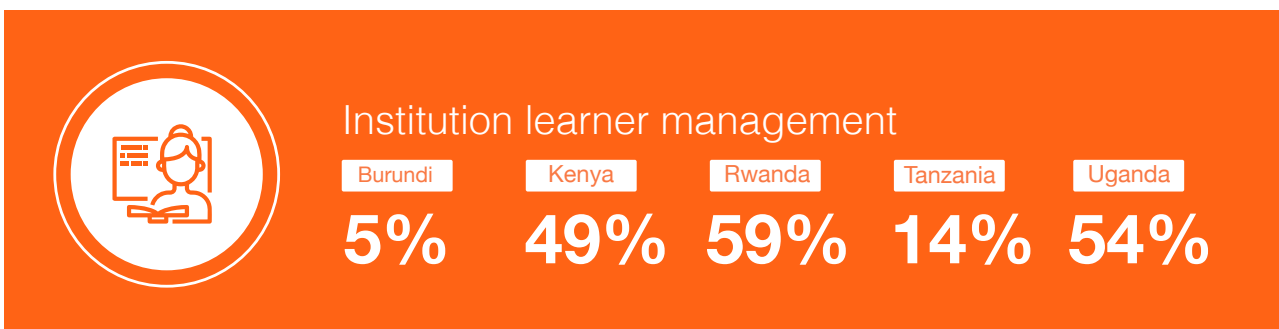
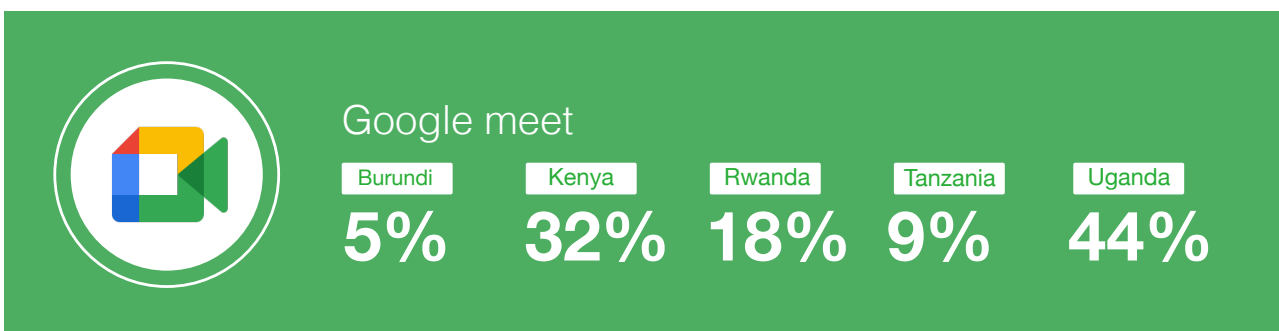
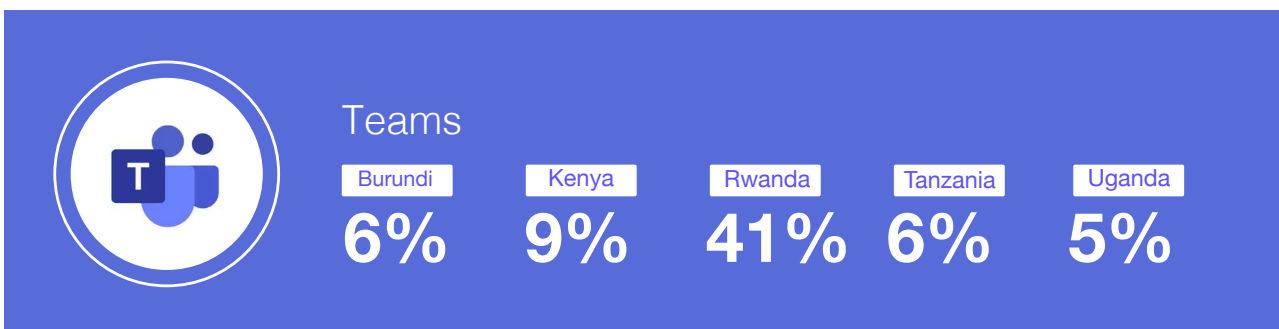
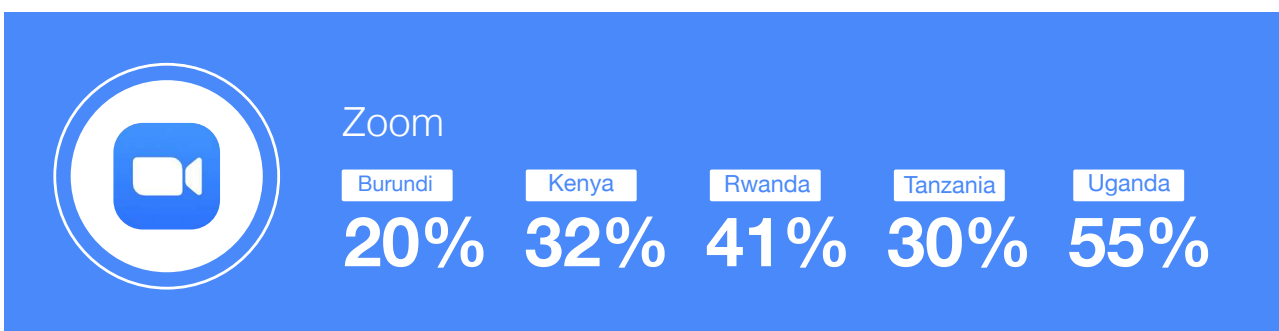
Figure 4: Institutional determinants of teaching model adoption

Notes: The figure plots the coefficients and the 95% confidence intervals. The coefficients are estimated from a probability regression model. This means that in 95 out of 100 samples, our estimated mean will fall within this range. Therefore, the true mean has a 95% chance of falling within this range.

3.3 Mode of delivery

For a successful eLearning adoption, the necessary infrastructure is needed. Across the region, there was a high uptake in the use of Zoom, Google Meet and Institutional Learner Management as opposed to Microsoft Teams, as shown in Figure 5. Teams was

only widely used in Rwanda. The choice of these mode of delivery may be attributed to their cost. However, it is important to point that Burundi and Tanzania had a low uptake of institutional learner management by 5 percent and 14% respectively.





3.4 Faculty employment

The economic shutdowns, reduction in tertiary education budgets, and low student enrolments pushed many HEIs into financial difficulties. Consequently, faculty member’s employment terms were also affected. In Figure 6, on average, 45% of the study’s faculty respondents remained permanently employed and 9 percent were on contract basis. Kenya had the lowest faculty members who remained permanent at 43%.

In Figure 6 , on average

45% | of the study’s faculty respondents remained permanently employed

9% | were on contract basis.

Kenya had the lowest faculty members who remained permanent at **43%**

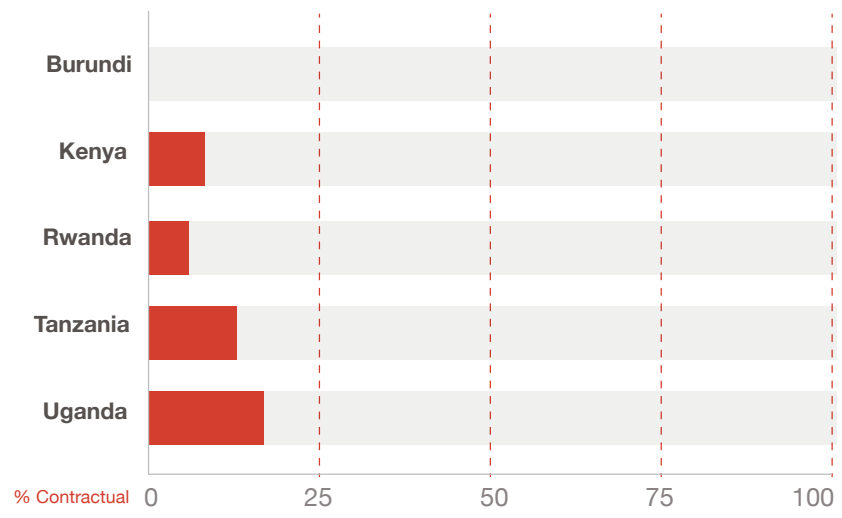
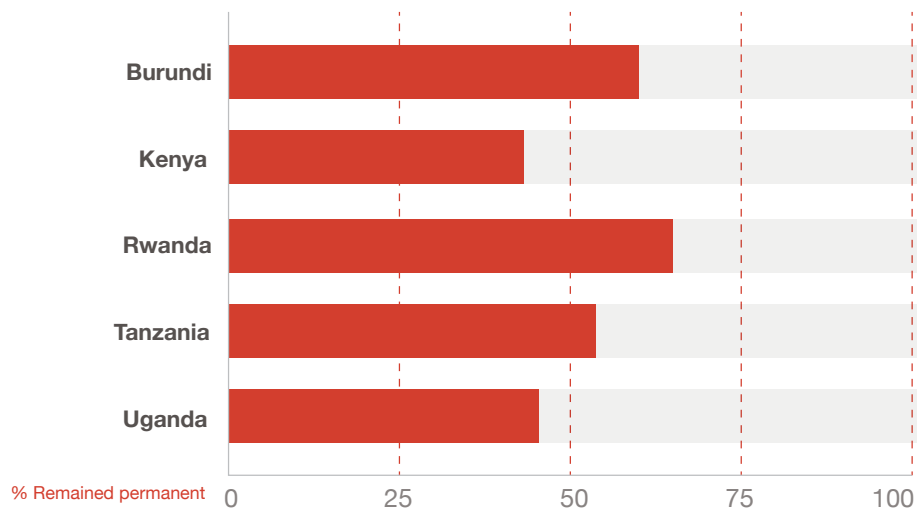


Figure 6: Faculty employment after resumption of learning

⁹ While we do not have the percentages before the pandemic, the survey asked, “Indicate what happened with regard to employment of faculty after resumption of learning”.



3.5 Salary and benefits

The financial constraints can also translate into reduction in pay and benefits. From Figure 7, we find that only 50% of faculty in Kenya and Tanzania had their salary paid on time, with only 17% of Ugandan

faculty members' salary being paid on time. Further, Ugandan faculty members experienced the highest pay cuts, reduced benefits, and their benefits were not remitted on time.



Figure 7: Faculty salary and benefits

3.6 Faculty challenges in transition to eLearning

The transition to eLearning has had its fair share of challenges, not only to the students, but also to faculty members. In Figure 8, on average, the study finds that some of the surveyed faculty members had inadequate eLearning skills with Burundi leading at 40%. Across the region, 41% of faculty members

had unreliable internet connection and 29% had inadequate electronic gadgets for eLearning. However, it is notable that most of these numbers were driven by Burundi and Ugandan faculty members who reported unreliable internet connection as a challenge to eLearning by 70% and 52% respectively.



Figure 8: Faculty challenges to eLearning



3.7 Institutional response to eLearning challenges

Response from HEIs on the above eLearning challenges is crucial for the provision of quality and equitable education during the pandemic.

From Figure 9, we find that apart from HEIs in Burundi and Tanzania who averaged at 20%, the other countries embarked on training their faculty on eLearning. HEIs in Uganda stands out in provision of internet bundles to faculty members at 38%, with the regional average being 21%. On average, 22% of the region's faculty could access the institutions systems via their personal internet provision. Consequently, most of the countries in the region did not provide faculty allowance to facilitate eLearning.

On average,

22%

of the region's faculty could access the institutions systems via their personal internet provision

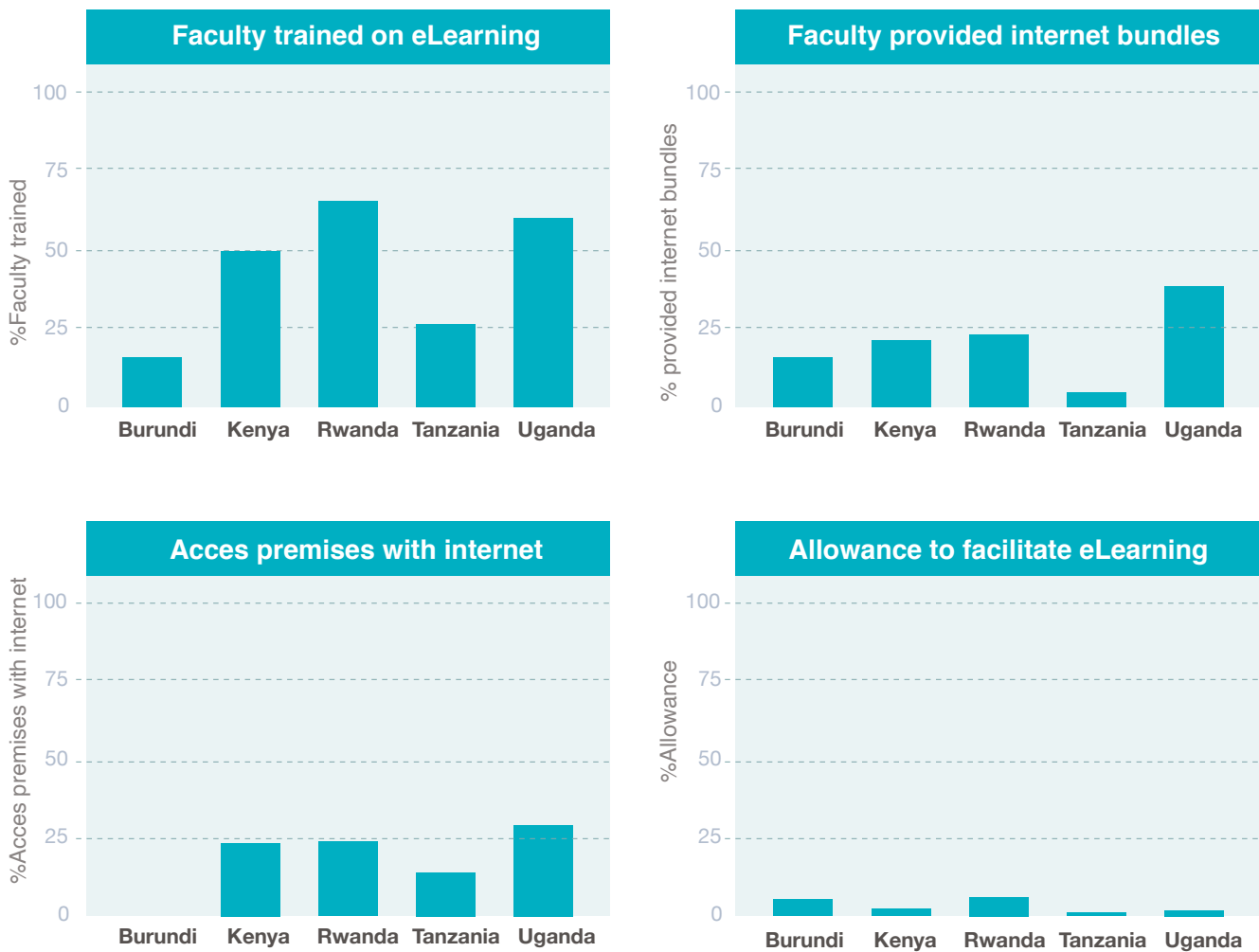


Figure 9: Institutional responses to eLearning challenges

3.8 Faculty workload

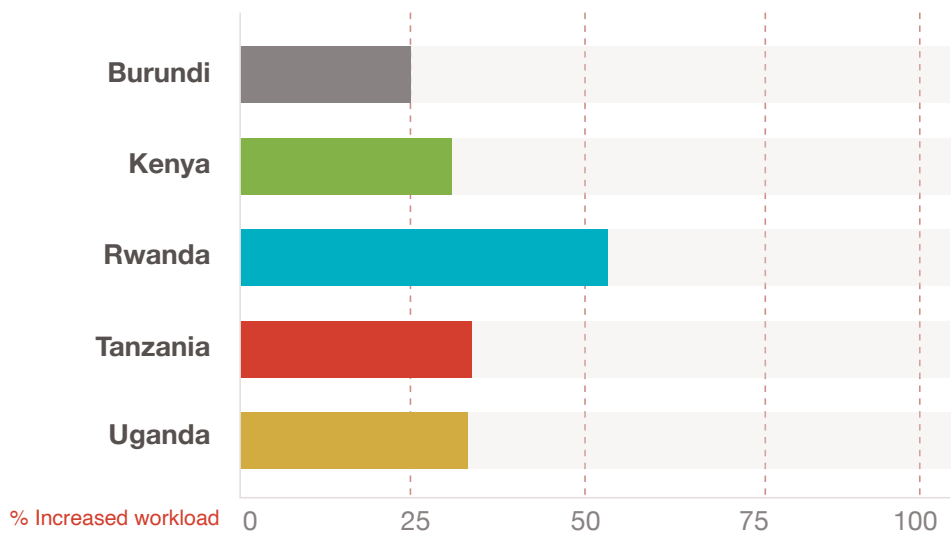
Navigating the new teaching tools and ensuring quality and equity in education delivery may be tedious, and faculty members may have increased workload in terms of increased lecture hours. In Figure 10, on average, EAC faculty reported increased workload (lecture hours) by 32%, with Rwanda leading by 53%. The increased workload may be countered by increased pay to motivate faculty members. However, less than 25% had their salary increased due to increased workload, except Burundi and Tanzania who averaged less than a 5% workload increase.

On average, EAC faculty reported an increased workload by

32%

lecture hours

Workload (lecture hours) increased



Increased workload with no pay increase

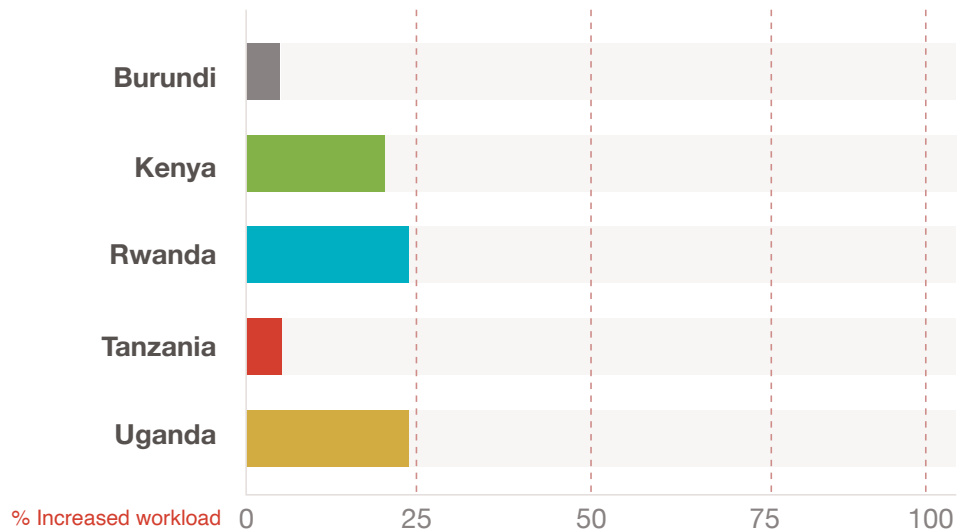


Figure 10: Faculty workload



3.9 Perceptions on eLearning

Some of the faculty members were not prepared to transition to eLearning, with those reporting not being prepared averaging 17% in the region. Faculty members in Kenya, Rwanda, and Tanzania reported spending more time preparing and teaching. However, overall faculty members did not feel that eLearning was cumbersome. Rwanda and Uganda faculty members felt that eLearning was not effective by 47% and 38% respectively. The regional average was 31% as presented in Figure 11.

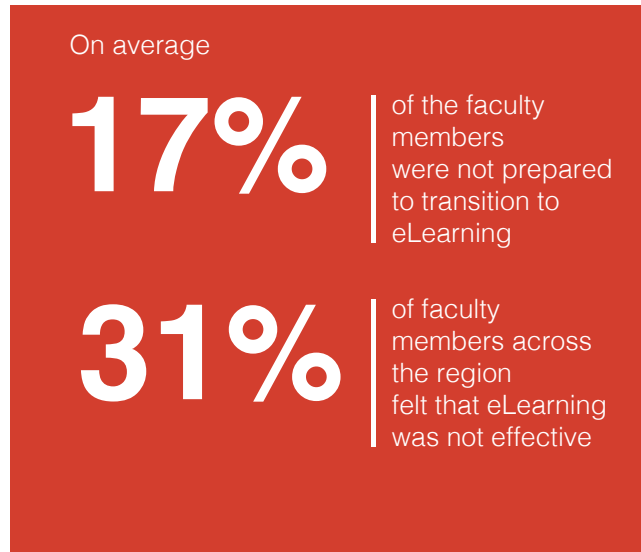


Figure 11: eLearning effectiveness



3.10 Administration of exams

Despite most countries in the region adopting eLearning, on average, only a small percentage (16%) of exams were administered online. However, Rwanda and Uganda offered most of their exams

in a blended way by 41% and 37% respectively, as presented in Figure 12. Tanzania's lack of strict lockdowns resulted in most of their exams being administered in-person.

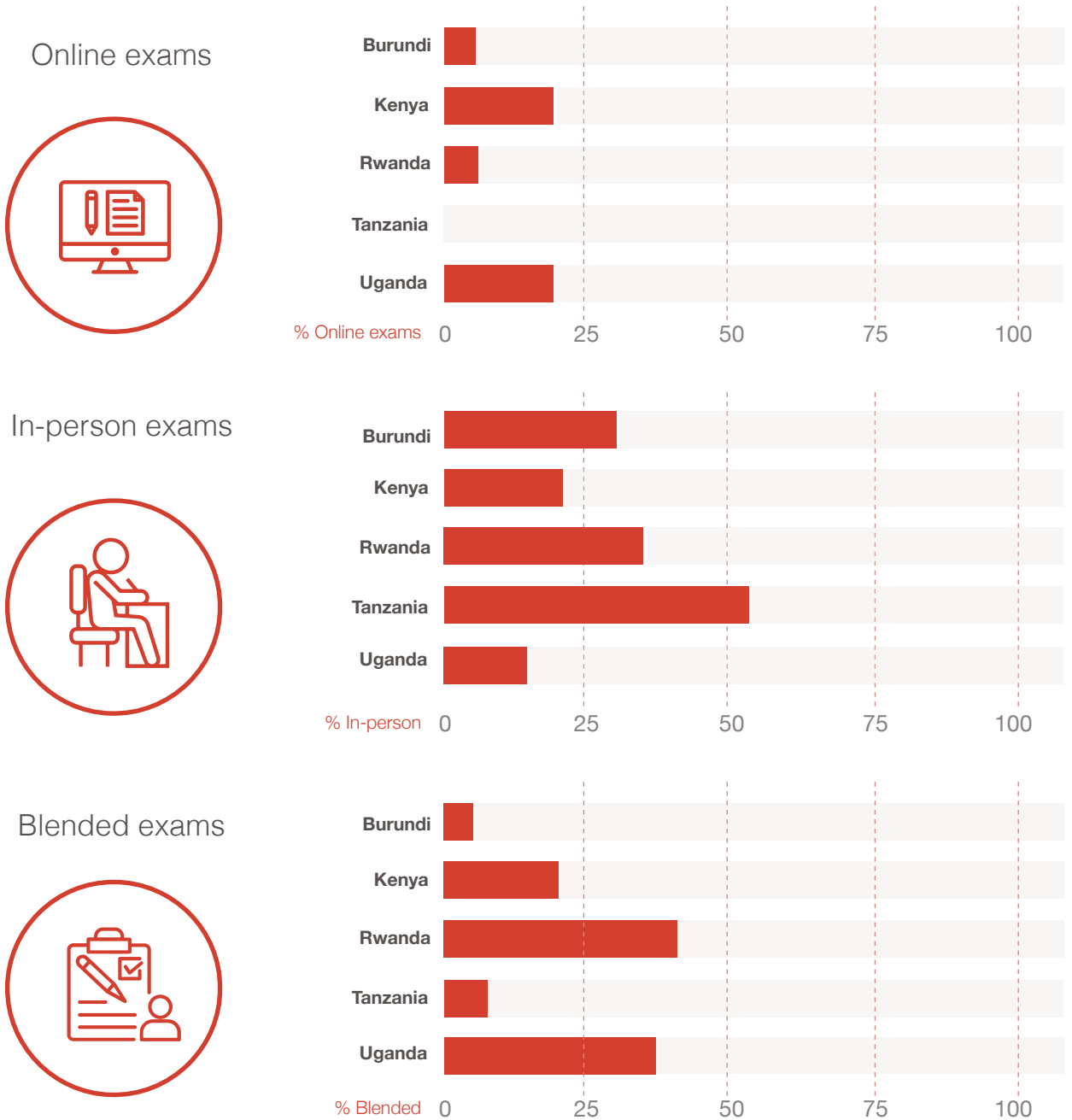
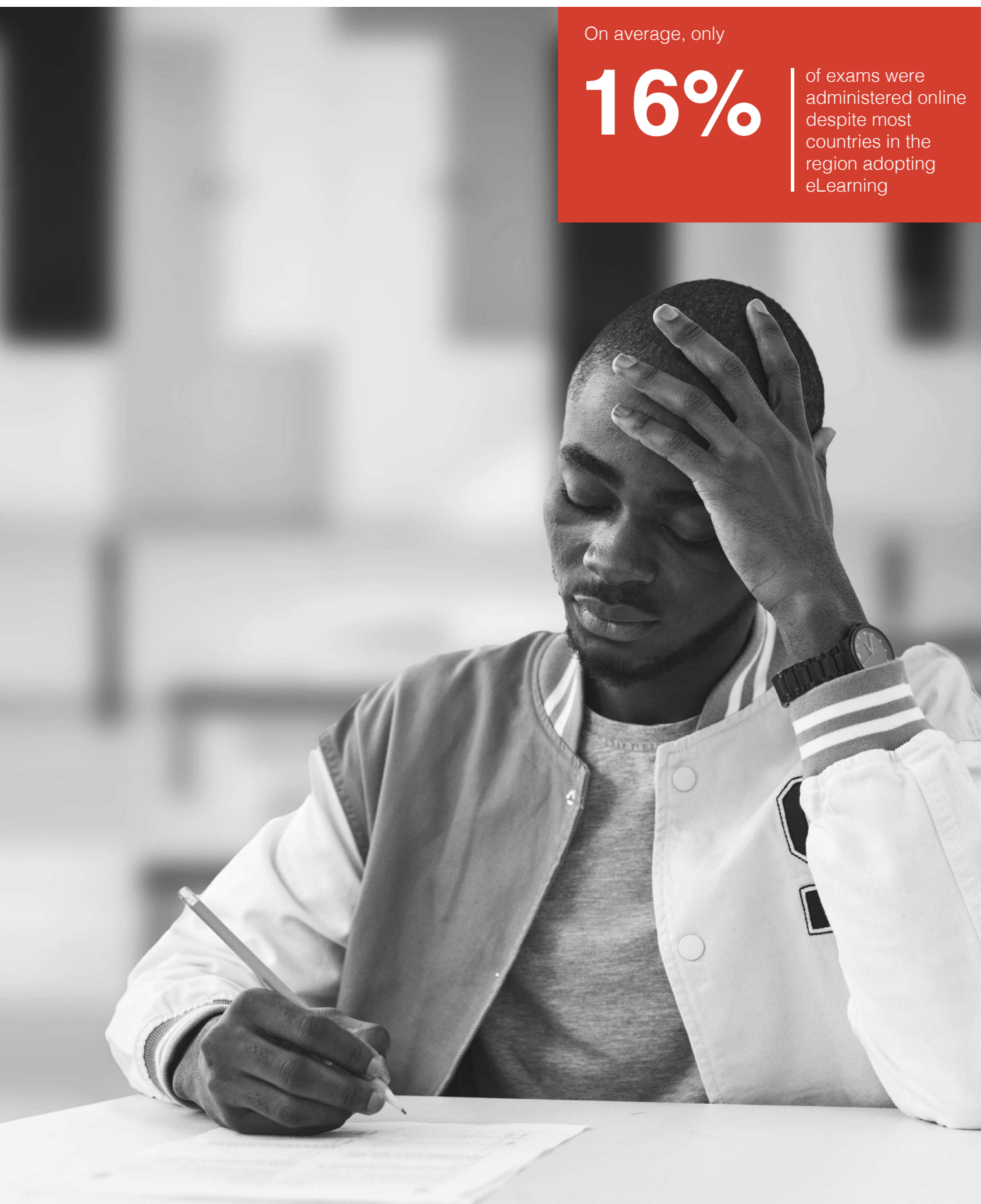


Figure 12: Administration of exams

On average, only

16%

of exams were administered online despite most countries in the region adopting eLearning





3.11 Integrity of online exams

One of the major challenges of administering online exams is how to maintain exam integrity (e.g., not possessing or using materials prohibited in the exams and not breaching any conditions outlined in the exam conduct policy for the institution). Across the region, in Figure 13, the analysis found that the probability of online exams systems failure was

increased by HEIs lack of preparedness for online exams (e.g., effective invigilation) by 10 percentage points. Lack of internet also increased the probability of online exams systems failure by 9 percentage points. However, training students and faculty on eLearning decreased the probability of exam failure by 29 percentage points.



Figure 13: Probability of online exams systems failure, upholding exam integrity and cumbersome exam marking under lack of preparation, internet, gadgets, training, and gender

Notes: The figure plots the coefficients and the 95% confidence intervals. The coefficients are estimated from a probability regression model. This means that in 95 out of 100 samples, our estimated mean will fall within this range. Therefore, the true mean has a 95% chance of falling within this range.

The likelihood of HEIs having difficulty in upholding exam integrity was increased by unstable internet connection by 16%, which also increased the probability of marking of online exams being cumbersome. Consequently, lack of internet access, electronic gadgets and poor transition to eLearning increased the likelihood of faculty members having an increased workload. Across the region, Kenya and Uganda had the highest number of HEIs who had difficulty upholding integrity of online exams by 27% and 31% respectively, against a regional average of 24% as shown in Figure 14.

16%

On average

24%

of HEIs had difficulty in upholding exam integrity due to unstable internet connection

of HEIs across the region had difficulty upholding integrity of online exams

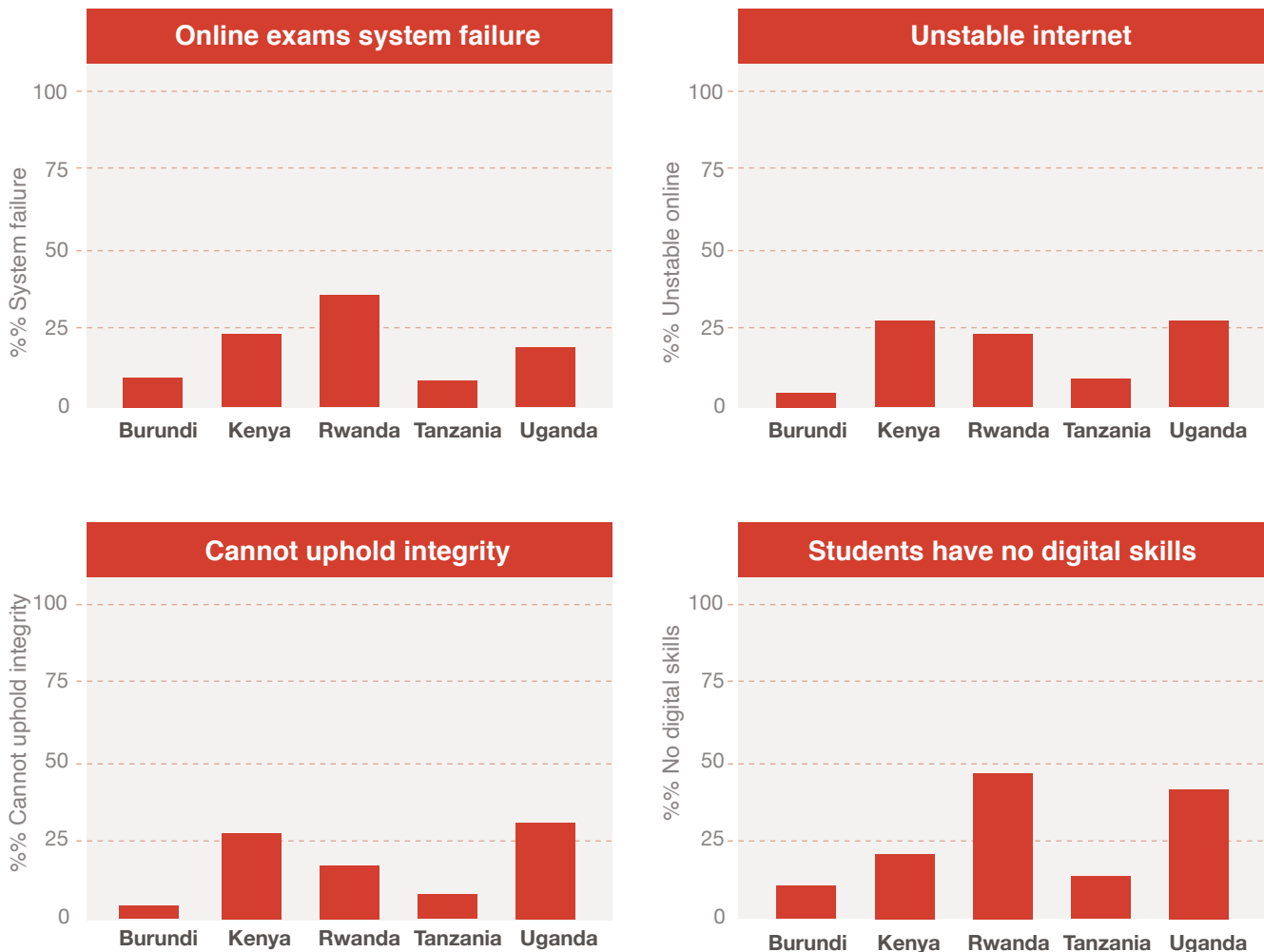


Figure 14: Challenges of administering online exams



3.12 Online exams training

Across the region, Burundi and Tanzania had the lowest numbers (below 10%) of students and faculty trained on online exams. This can be attributed to the fact that they used in-person delivery so online training was not a priority.

Furthermore, all countries in the region had very limited to no efficient virtual platforms for monitoring online exams to curb cheating and ensure the integrity of online exams, as shown in Figure 15.

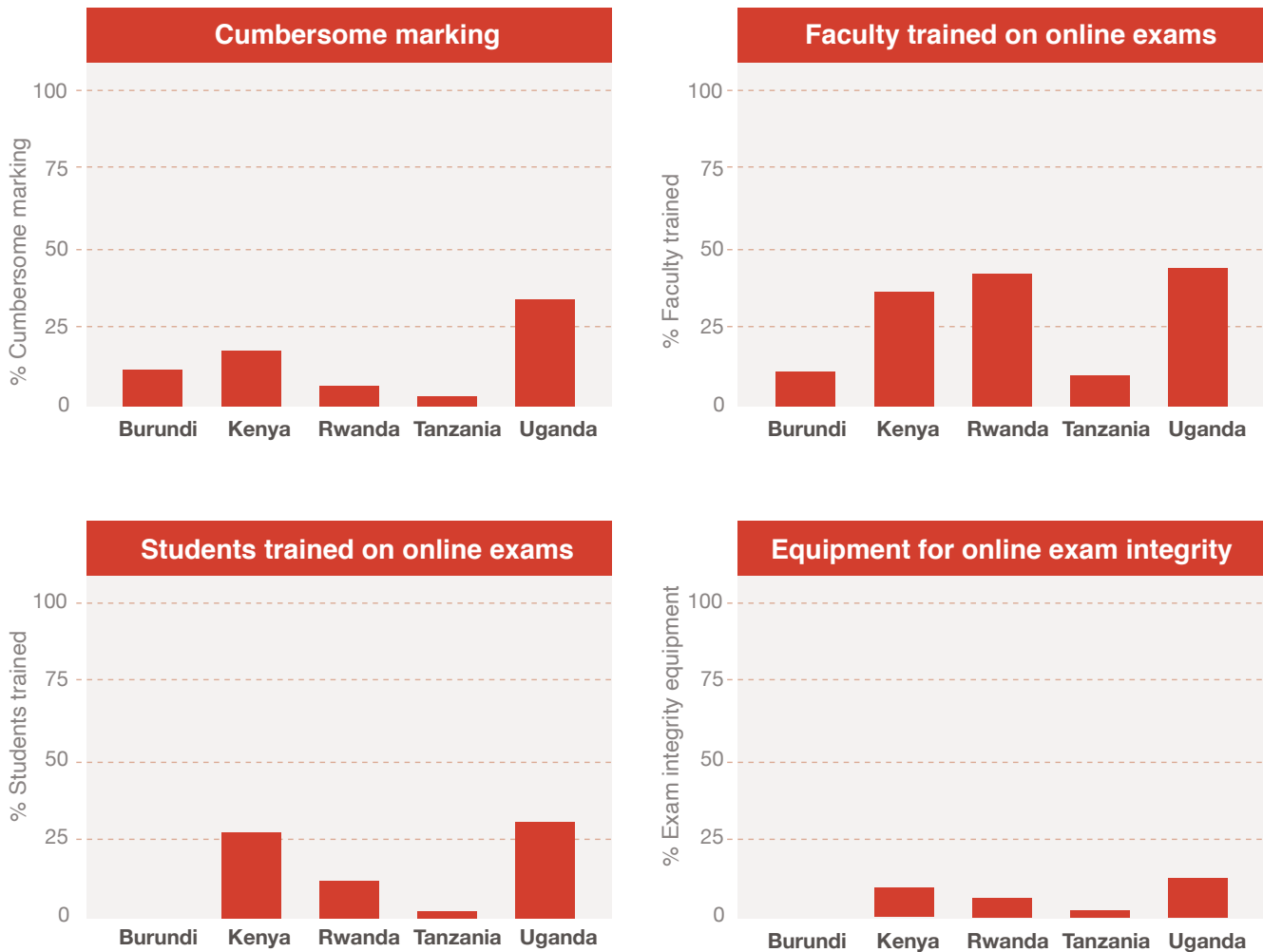
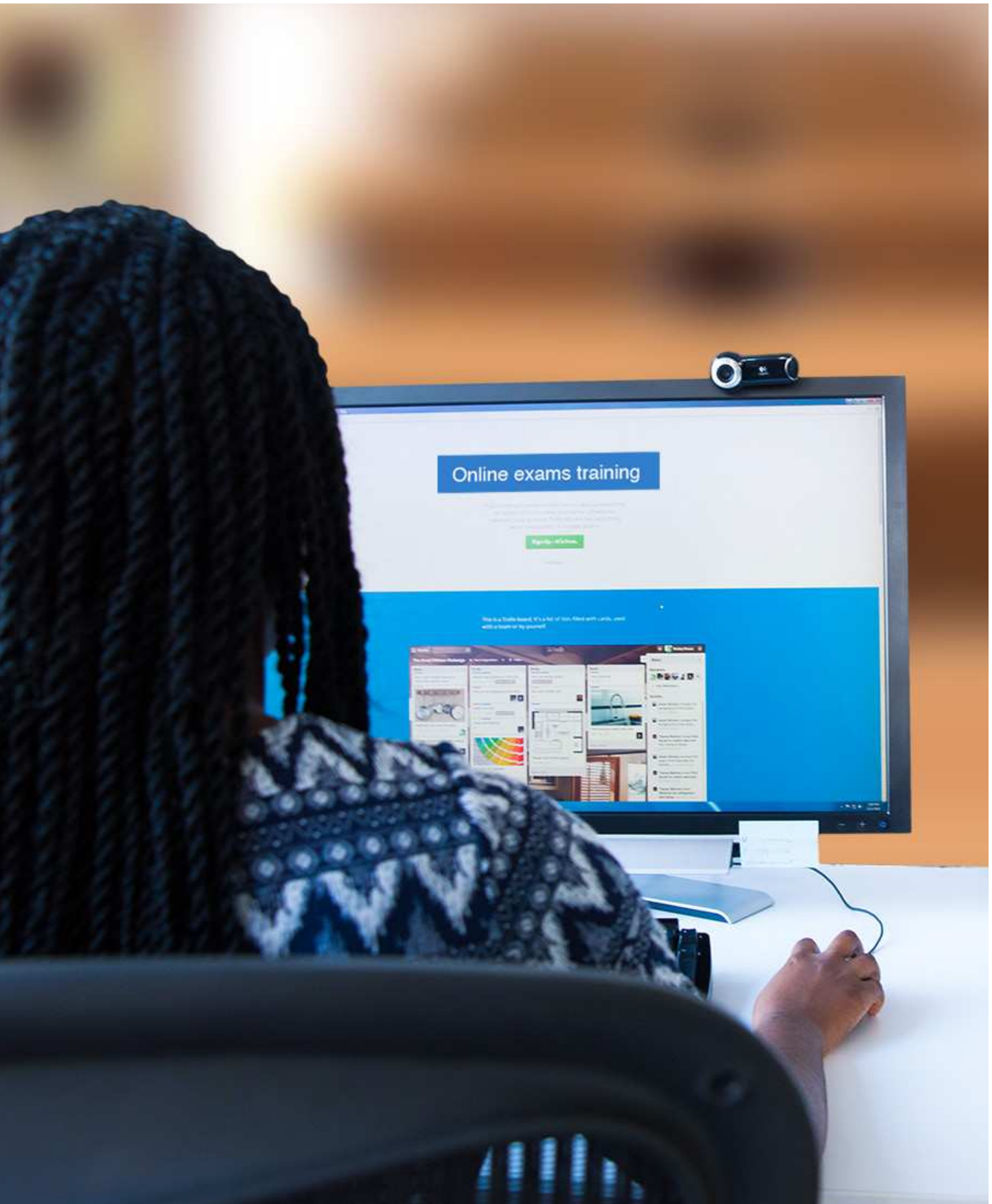


Figure 15: Students and faculty training on online exams



3.13 Research during the COVID-19 pandemic

The COVID-19 pandemic has had negative effects on research by faculty. Across the EAC, more than 70% of faculty members did not conduct research during the pandemic, less than 25% published, and less than 5% of researchers reported that their projects got suspended. Further, this was reflected in the attendance of online conferences, with 36% of faculty members attending online conference on average, as shown in Figure 16.

More than

70%

of faculty members did not conduct research during the pandemic

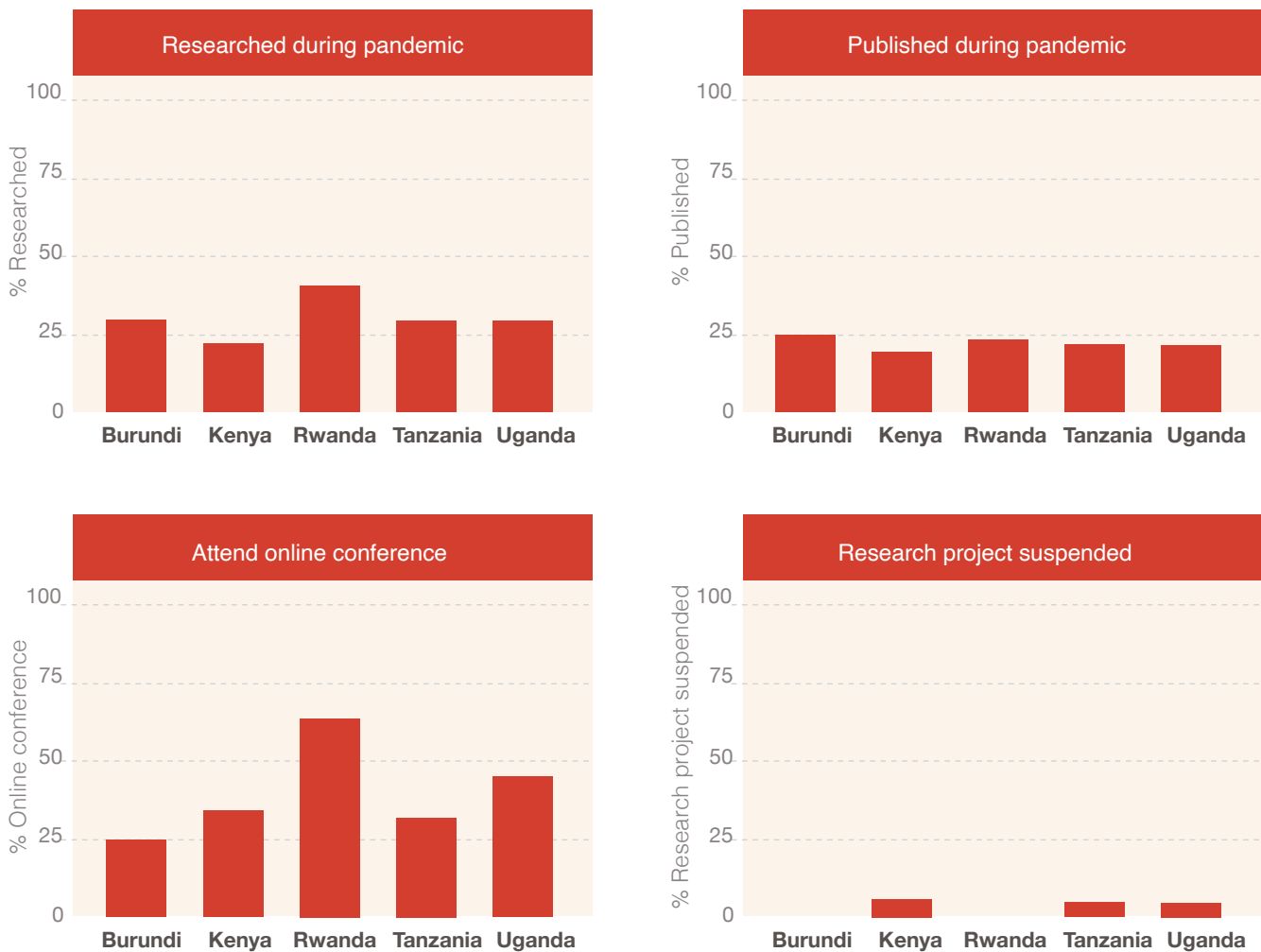


Figure 16: Research during the pandemic

3.14 Determinants of research during COVID-19

In Figure 17, the study finds that across the region, faculty research was reduced by the intensive work involved in eLearning, lack of research funds, suspension of research projects, and being female by 24 percentage points, 19 percentage points, 14 percentage points, and 5 percentage points, respectively. Publishing during the pandemic was also reduced by intensive work involved in eLearning

and lack of research funds by 20 percentage points and 16 percentage points, respectively. The increased workload also reduced the probability of attending online conferences by 33 percentage points and 28 percentage points, respectively. Also, lack of institutional support during this period increased the likelihood of lack of faculty personal development.

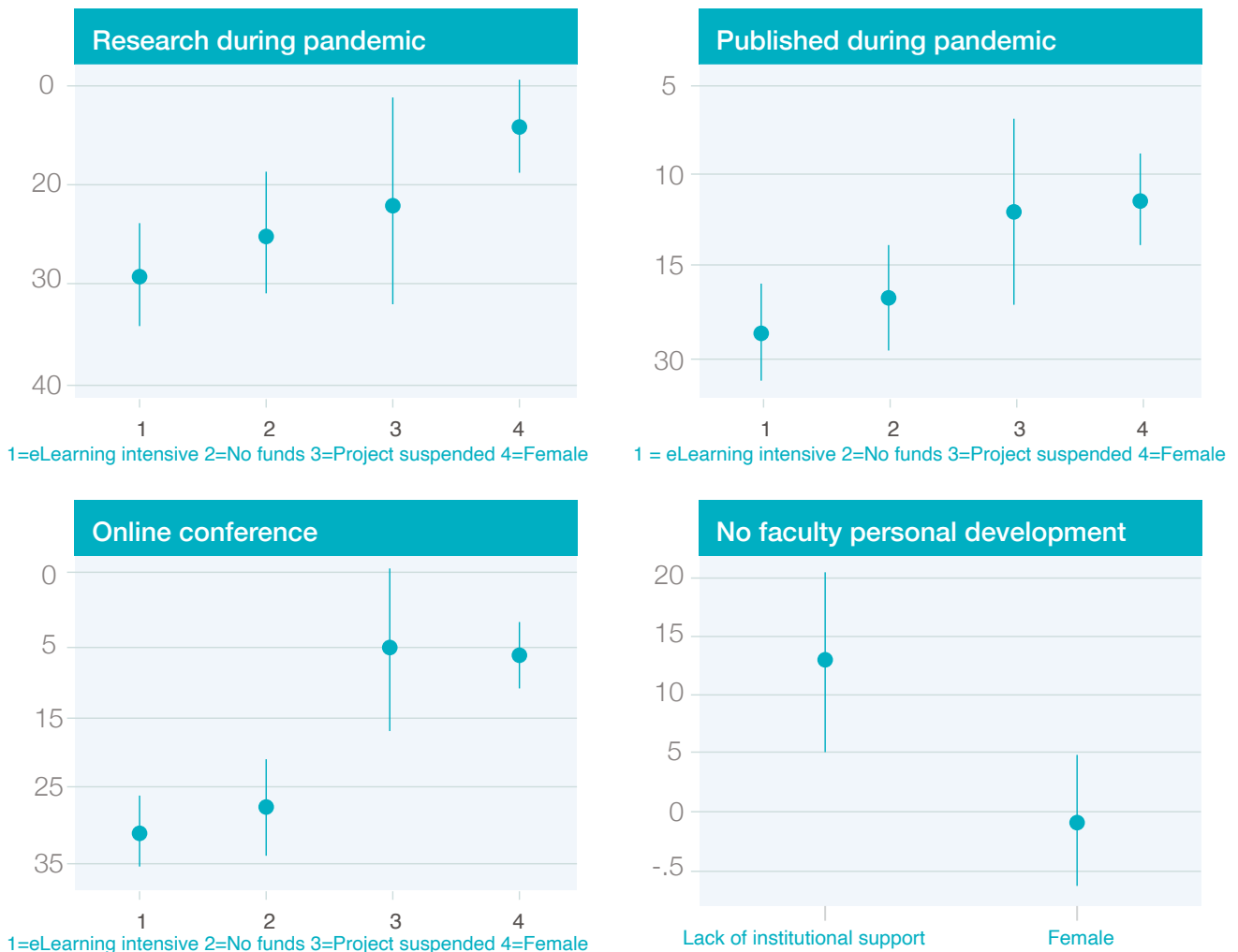


Figure 17: Determinants of research during the COVID-19 pandemic

Notes: The figure plots the coefficients and the 95% confidence intervals. The coefficients are estimated from a probability regression model. This means that in 95 out of 100 samples, our estimated mean will fall within this range. Therefore, the true mean has a 95% chance of falling within this range.



3.15 Challenges to career progress

Faculty members reported that the pandemic delayed faculty promotion by 24% in Rwanda and 9% across the region. On average, 18% of the faculty across the region indicated that they did not attend any personal development meetings, 11% feared retrenchment, and 20% had their research funds reduced as presented in figure 18.1.

These challenges contributed to 10% of the faculty relocating to the rural areas due to high cost of living and 25% reported financial difficulty in providing

for their families with Uganda leading at 50% of the sampled respondents. To counter this problem, 23% of the faculty members reported to have ventured into alternative sources of income with Uganda leading at 38%. Across the region, 15% of our sample resigned to seek greener pastures with Uganda leading at 48% and in Burundi there was not enough responses to draw inference for faculty resigning to seek greener pastures, as shown in Figure 18.2.

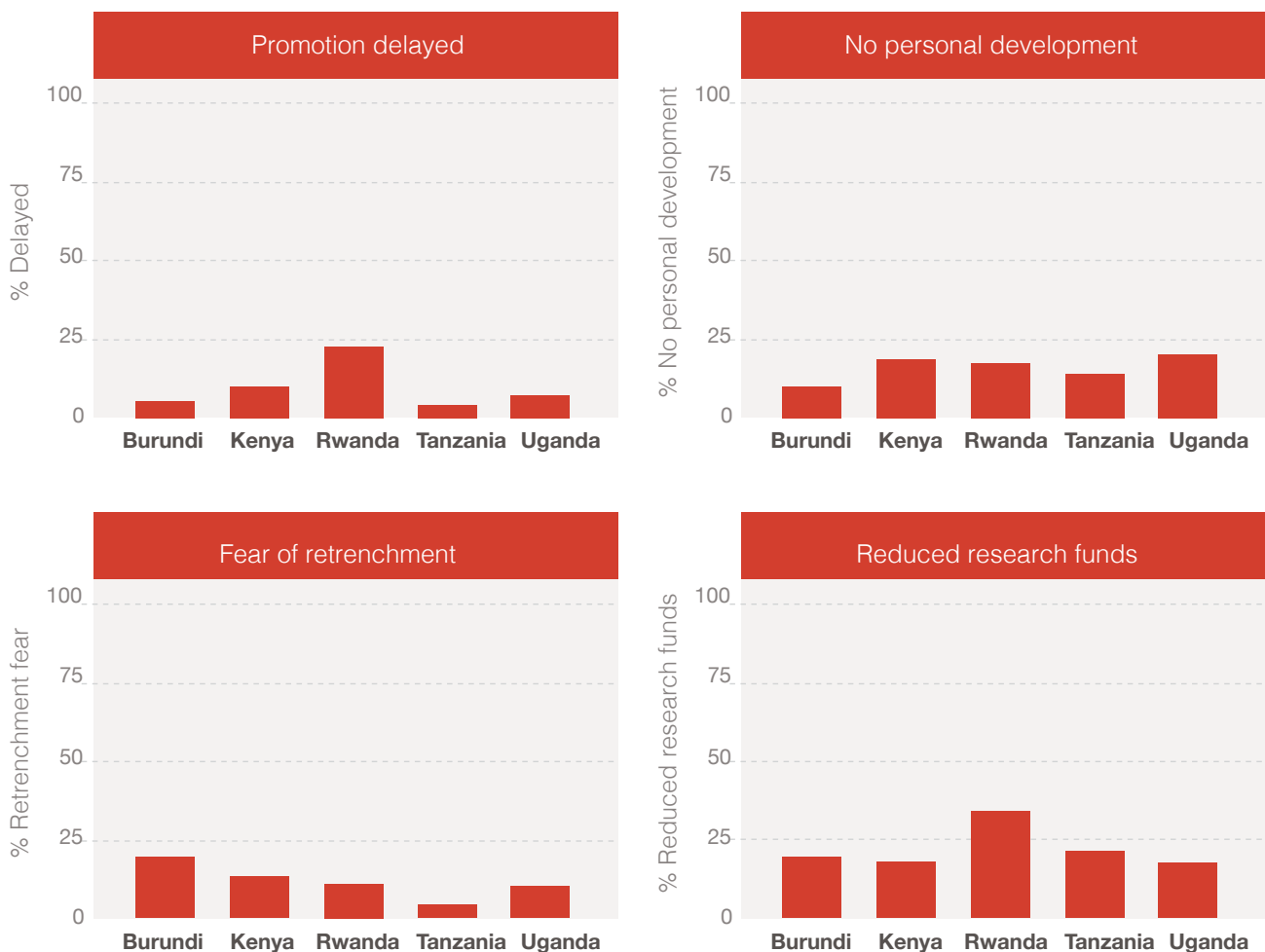
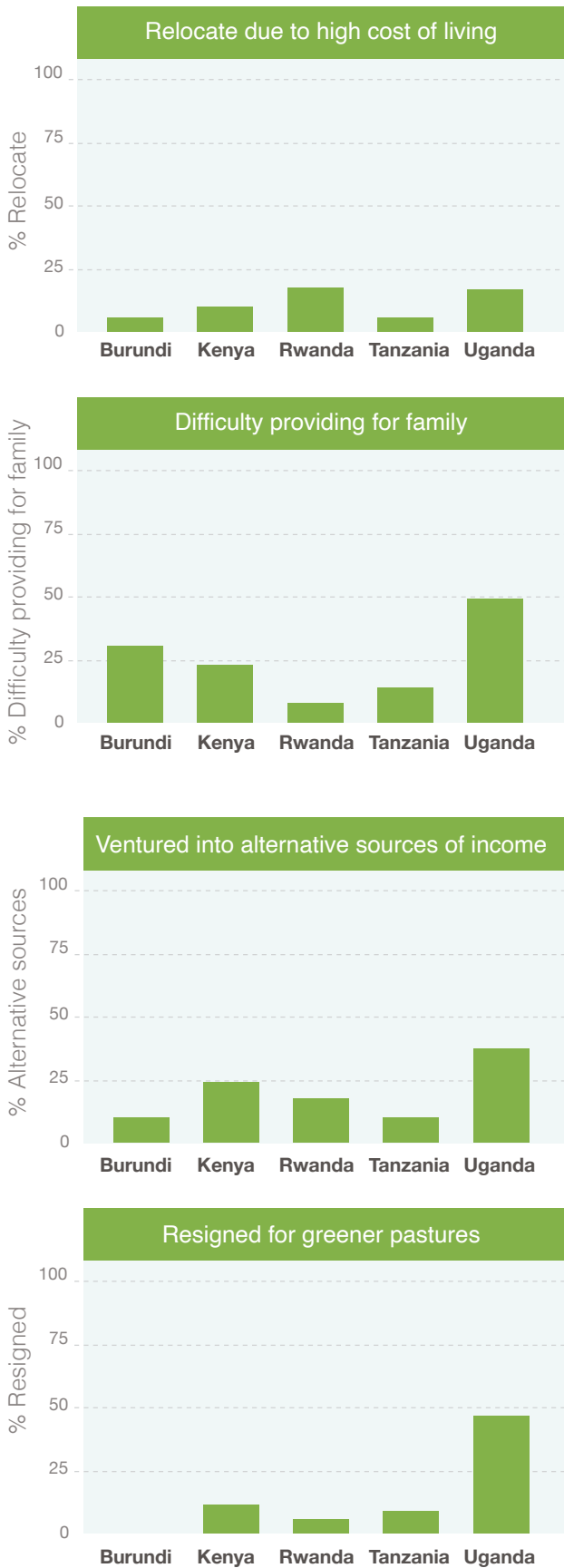


Figure 18.1: Challenges to career progress



9%
of faculty members reported that the pandemic delayed faculty promotion

10%
of the faculty relocated to the rural areas due to high cost of living and 25% reported financial difficulty in providing for their families

23%
of the faculty members reported to have ventured into alternative sources of income with Uganda leading at 38%.



Figure 18.2: Challenges to career progress

3.16 Mental health

On average, 14% of faculty members in the region reported to have experienced depression. Rwanda had low levels of depression at 6%. Among the respondents in the region, 6% reported loneliness, with Uganda reporting high levels at 25%. Marital

strife was experienced by 8% of faculty members and only 5% attended counselling. However, some faculty members did not respond to these questions as shown in Figure 19.



Figure 19: Mental health



14%

of faculty members
in the region
reported to have
experienced
depression

3.17 Student enrolment

As shown in Figure 20, across the region, on average, students' recruitment reduced by 23%. The most affected countries were Kenya at 36%, Rwanda at 50%, and Uganda at 42%. Also, international students' recruitment went down by

27% with Burundi and Uganda at 33%, and Kenya leading at 57%. However, in the survey, there was no data for decreased student enrolment in Burundi and Tanzania and decreased international student recruitment in Rwanda and Tanzania.

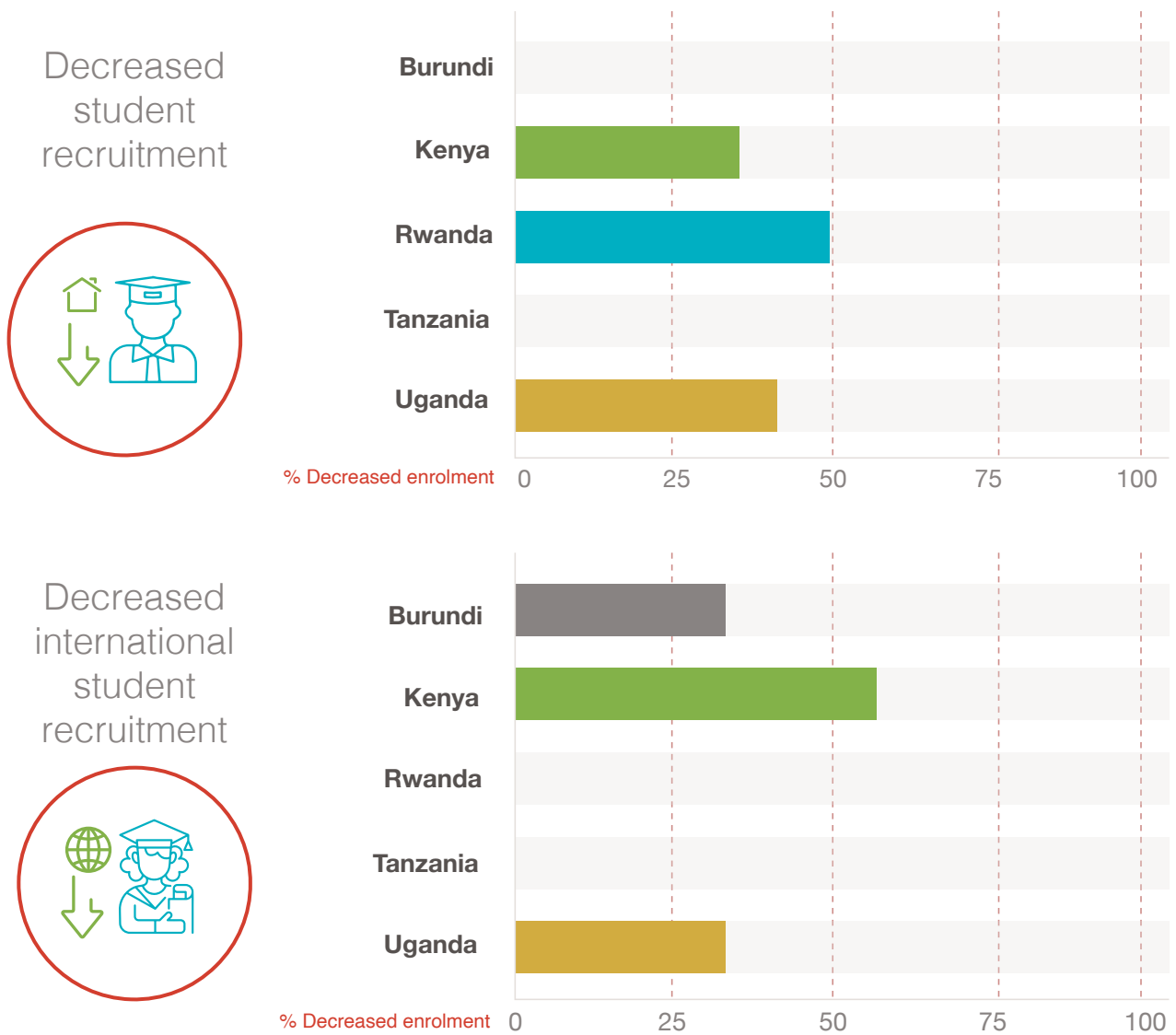


Figure 20: Student enrolment



Across the region, on average, students' recruitment reduced by

23%

3.18 International students and exchange students

Across the EAC, on average, 23% of international students suspended their studies. The affected countries were Kenya at 43%, Rwanda by 50% and Uganda by 33%. Consequently, Kenya and Uganda suspended their exchange programs by 23% and 25% respectively. There was no data for Burundi and Tanzania for international students who suspended their studies, as well as exchange programmes that were suspended in Burundi, Rwanda, and Tanzania.

Across the EAC,

23%

of international students suspended their studies

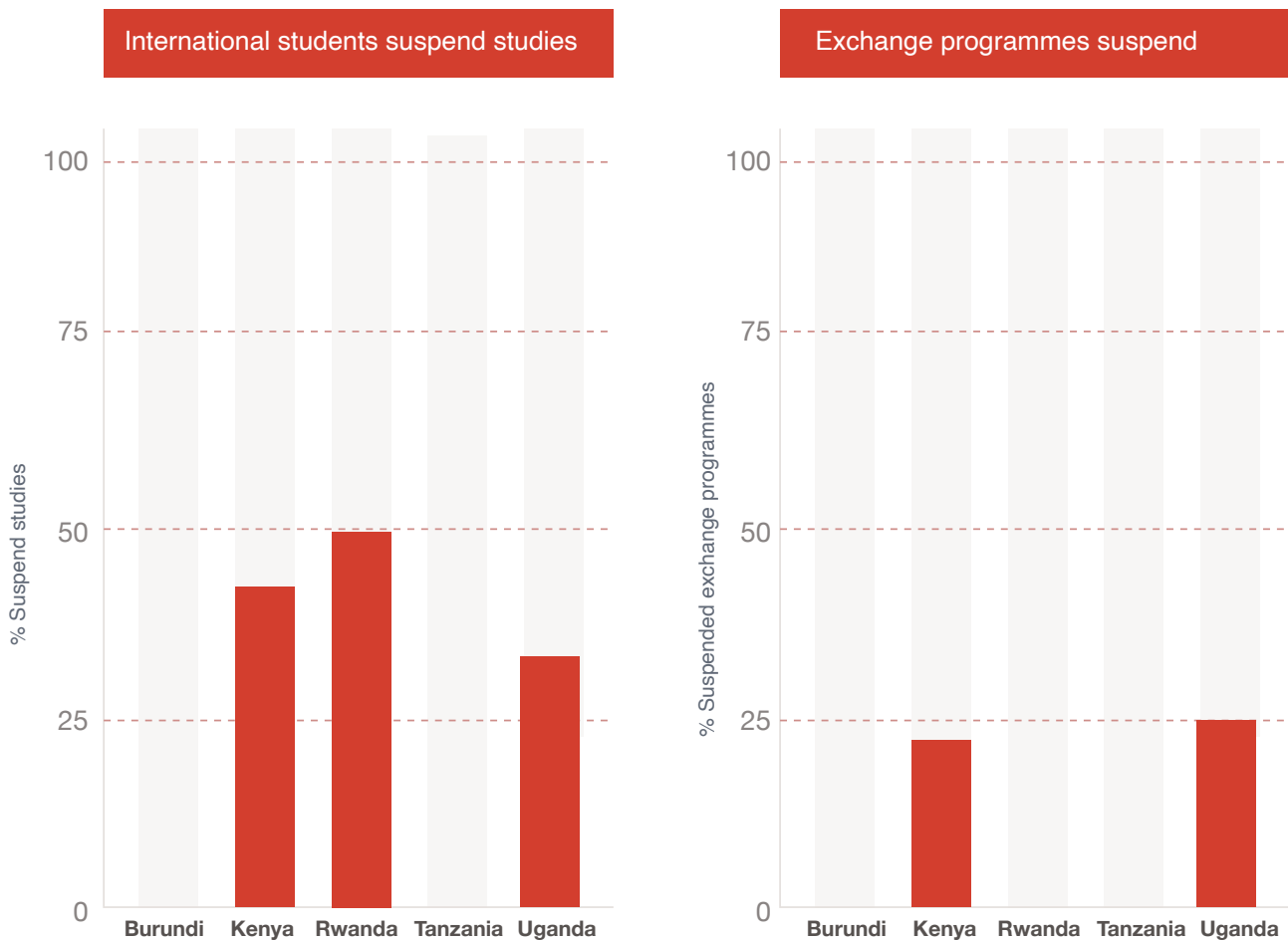


Figure 21: International students and exchange students' suspension of studies and programmes





4. Conclusion

The analysis from this report shows that the COVID-19 pandemic had effects on the teaching and learning models and the supply and demand of faculty in the EAC. Some of these effects are:

- a) **Challenges in transitioning to eLearning due to lack of policies, ICT infrastructure, and skills.**
- b) **Reduction in faculty salaries, delay in salary payments, reduced benefits, benefits not being paid on time, and fear of being retrenched.**
- c) **Increased faculty workload.**
- d) **Online exams system failures and difficulty in upholding exam integrity.**
- e) **Decrease in research output.**
- f) **Reduced attendance in academic conferences and personal development meetings.**
- g) **Increased depression and loneliness.**
- h) **Reduced students' enrolment, suspension of studies by international students, and suspension of student exchange programs.**

The findings from this report come from a survey that was conducted at the peak of the COVID-19 pandemic. Time has elapsed since the survey was conducted and most of the HEIs have resumed normal activities. However, some effects of the COVID-19 pandemic will take some years to address, and some of the challenges encountered can be turned into opportunities, especially in the use of technology, to improve the quality of higher education for the growing youth population in the region and the continent.

The main limitations of this report are presented here. Firstly, the survey took place during the pandemic and was administered online and in some countries such as South Sudan, the response rate was too low to draw the needed inferences. Secondly, in

countries such as Burundi and Tanzania, some variables of interest did not have enough response rates hence it was not easy to verify accuracy of the online responses. Lastly, the quantitative results ideally needed some qualitative analysis to put the findings in the context of the specific country's COVID-19 policy decisions.

Given the weaknesses of the evidence presented in this report, the DAF EAC consortium needs to identify opportunities to engage higher education stakeholders and conduct interviews and focused group discussions. We can then fill-in these gaps, identify and/or co-create innovative solutions to address the faculty challenges exacerbated by the pandemic, and embrace new opportunities presented by the pandemic.

References

Idris, F., Zulkipli, I. N., Abdul-Mumin, K. H., Ahmad, S. R., Mitha, S., Rahman, H. A., & Naing, L. (2021). Academic experiences, physical and mental health impact of COVID-19 pandemic on students and lecturers in health care education. *BMC Medical Education*, 21(1), 1-13.

IUCEA (2021). The Impact of COVID-19 on Higher Education, Its Business Implications and Proposed Recovery Strategy.

Joyce, B., Weil, M., & Calhoun, E. (2003). *Models of teaching*.

Long, J. S., & Long, J. S. (1997). *Regression models for categorical and limited dependent variables* (Vol. 7). Sage.

Wooldridge JM (2012) *Introductory Econometrics: A Modern Approach*. Mason, OH: Nelson Education.

World Bank (2020). The COVID-19 Crisis Response: Supporting tertiary education for continuity, adaptation, and innovation. Available at

<https://documents1.worldbank.org/curated/en/621991586463915490/The-COVID-19-Crisis-Response-Supporting-Tertiary-Education-for-Continuity-Adaptation-and-Innovation.pdf>



Appendices

Analytical Framework

In this study, we model our outcomes of interest (Institutional preparedness in eLearning and online exams, Research and personal development, and Faculty salary and benefits) at the institutional/faculty level across the countries as a binary dependent variable whose value is one (1) if there if the outcome is present, or zero (0) if otherwise. With a binary variable, a probit model is favoured due to the normality of the error term and the properties of normal distribution (Wooldridge, 2012: 586). Hence the study adopts a probit maximum likelihood estimation technique. The outcomes of our interest take the binary outcome defined as:

$y_i = 1$ if $y_i^* > 0$ if the i th individual experiences the outcome or

$y_i = 0$ if $y_i^* < 0$ if the i th individual experiences a lack of it

The probit model assumes that the probability that y_i^* depends on a vector of observed variables x_i which can be represented as

$$y_i = \beta_j x_i + \mu_i \quad (1)$$

where y_i^* is the response variable for the presence of our outcomes of interest; β_j represents the parameters to be examined; x_i represents the explanatory variables; and is the error term which is normally distributed. Therefore, Equation (1) represents binomial probabilities of standard normal cumulative density, where:

$$Pr (y = 1) = Pr (y^* > 0) = P(\beta_j x_i) \quad (2)$$

$$Pr (y = 0) = Pr (y^* \leq 0) = 1 - P(\beta_j x_i) \quad (3)$$

As the regressors X_1, \dots, X_n are indicator variables, we seek to obtain the marginal probability effect of x_i as follows

$$x_i = P(\beta_j x_{1i}) - P(\beta_j x_{0i}) \quad (4)$$

From the above derived analytical framework, we expand equation (1) to estimate our variables of interest (X_1, \dots, X_n) as follows:

$$y_i^* = \beta_0 + \beta_1 X + \varepsilon \quad (5)$$



Table A1: Faculty support in eLearning transition

	(1) Faculty trained in eLearning	(2) HEI provides faculty internet bundles
In-person	0.055 (0.039)	0.039 (0.037)
Distance	0.066 (0.043)	0.071 (0.048)
eLearning	0.145*** (0.035)	0.114*** (0.035)
Blended	0.313*** (0.022)	0.243*** (0.031)
Female	-0.001 (0.019)	-0.020 (0.026)
Year employed	0.000 (0.001)	-0.001 (0.002)
Department	0.000 (0.000)	-0.000 (0.000)
Citizenship	0.004 (0.045)	-0.021 (0.072)
Kenya	-0.033 (0.051)	-0.135 (0.090)
Rwanda	0.013 (0.065)	-0.131 (0.126)
Tanzania	-0.061 (0.054)	-0.236** (0.094)
Uganda	0.002 (0.051)	-0.021 (0.099)
N	648	648

Notes: Marginal effects after probit regression. Robust standard errors in parentheses clustered at the respondent level. Significance level: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$



Table A2: Institutional preparedness in eLearning and online exams

	(1) Increased workload	(2) Online exams system failure	(3) Difficult to uphold online exams integrity
Not prepared	0.210*** (0.046)	0.053 (0.032)	0.064** (0.029)
No internet	0.106** (0.043)		
No gadgets	0.222*** (0.039)		
Unstable internet		0.160*** (0.027)	0.094*** (0.026)
Trained		-0.298*** (0.035)	-0.222*** (0.035)
Female	-0.020 (0.033)	-0.032 (0.026)	-0.011 (0.025)
Year employed	0.006** (0.002)	0.002 (0.002)	-0.001 (0.002)
Department	-0.000 (0.000)	-0.000 (0.000)	-0.000 (0.000)
Citizenship	0.129 (0.079)	-0.001 (0.061)	0.011 (0.069)
Kenya	0.038 (0.083)	0.042 (0.142)	-0.104 (0.122)
Rwanda	0.112 (0.136)	-0.066 (0.156)	-0.213* (0.129)
Tanzania	0.086 (0.092)	-0.030 (0.147)	-0.224* (0.123)
Uganda	-0.010 (0.091)	0.029 (0.144)	0.001 (0.125)
N	648	648	648

Notes: Marginal effects after probit regression. Robust standard errors in parentheses clustered at the respondent level. Significance level: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table A3: Research and personal development

	(1) Researched during pandemic	(2) Published during pandemic	(3) Participate in online conference	(4) Did not attend personal development
eLearning takes more time	-0.242*** (0.030)	-0.200*** (0.029)	-0.332*** (0.024)	
No research funds	-0.191*** (0.036)	-0.157*** (0.034)	-0.284*** (0.037)	
Research project suspended	-0.149** (0.067)	-0.049 (0.060)	-0.013 (0.074)	
Lack of institutional support				0.133*** (0.041)
Female	-0.053* (0.030)	-0.033 (0.029)	-0.021 (0.030)	-0.010 (0.030)
Year employed	-0.002 (0.002)	-0.001 (0.002)	0.002 (0.002)	0.002 (0.002)
Department	0.000 (0.000)	-0.000 (0.000)	-0.000 (0.000)	0.000 (0.000)
Citizenship	-0.144* (0.083)	-0.061 (0.077)	0.041 (0.073)	-0.004 (0.075)
Kenya	-0.099 (0.082)	-0.095 (0.078)	0.047 (0.079)	0.087 (0.070)
Rwanda	-0.003 (0.142)	-0.115 (0.108)	0.257** (0.125)	0.083 (0.118)
Tanzania	-0.015 (0.091)	-0.035 (0.088)	0.034 (0.088)	0.049 (0.076)
Uganda	-0.068 (0.091)	-0.092 (0.088)	0.077 (0.089)	0.124 (0.083)
N	648	648	648	648

Notes: Marginal effects after probit regression. Robust standard errors in parentheses clustered at the respondent level. Significance level: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$



Table A4: Faculty salary and benefits

	(1) Salary paid on time	(2) Salary pays cuts	(3) Benefits reduced	(4) Fear of retrenchment
Lack of institutional support	-0.025 (0.045)	0.134*** (0.038)	0.131*** (0.029)	0.068** (0.034)
Female	-0.084** (0.038)	-0.048 (0.035)	-0.053* (0.027)	0.014 (0.025)
Year employed	0.002 (0.003)	0.006*** (0.002)	0.003* (0.002)	-0.001 (0.002)
Department	0.000 (0.000)	0.000 (0.000)	-0.000 (0.000)	0.000 (0.000)
Citizenship	-0.188** (0.091)	-0.165** (0.076)	0.021 (0.065)	0.000 (0.000)
Kenya	0.140 (0.106)	0.000 (0.000)	-0.087 (0.059)	-0.061 (0.091)
Rwanda	-0.001 (0.157)	0.000 (0.000)	-0.190 (0.123)	-0.036 (0.135)
Tanzania	0.145 (0.116)	0.000 (0.000)	-0.011 (0.064)	-0.141 (0.093)
Uganda	-0.206* (0.112)	0.000 (0.000)	-0.191*** (0.073)	-0.080 (0.096)
N	648	628	648	620

Notes: Marginal effects after probit regression. Robust standard errors in parentheses clustered at the respondent level. Significance level: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$



THE IMPACT OF COVID-19

ON TEACHING MODELS
AND THE SUPPLY AND
DEMAND OF FACULTY

IN THE EAST AFRICAN COMMUNITY

Published by:

Education Sub Saharan Africa
Twitter: @essa_africa
Website: www.essa-africa.org

Inter-University Council for East Africa
Website: www.iucea.org
Email: info@iucea.org

