Report of the ICT Capacity Survey conducted by RUFORUM Secretariat, 2019/2020

1. Introduction

Over the last 15 years, the Regional Universities Forum for Capacity Building in Agriculture (RUFORUM), a network of 129 universities in 38 African countries has established itself as a regional networking platform that seeks to facilitate higher education institutions in Africa to re-orient their training to respond to the development priorities particularly addressing the societal pressing challenges. The motivating force behind RUFORUM's agenda is the realization that transforming Africa's agriculture, communities and economies requires innovative scientific research, educational and training approaches with the education sector being more connected to the new challenges facing communities and this transformation should be driven by information and communication technology (ICT).

RUFORUM's Vision 2030 seeks to drive "the African Universities' Agenda for Agricultural Higher Education, Science, Technology and Innovation (AHESTI)" with a strong emphasis on ICT as an enabling factor. To implement this Vision, one of the four flagship programmes known as the Knowledge Hub (K-Hub) has been developed.

K- Hub initiative integrates knowledge management and ICT in order to provide a platform to support networking, partnerships and advocacy. The K-Hub is a dynamic and adaptive platform for accelerating the acquisition of knowledge (information, facts, principles, skills and understanding acquired through education and experience) by its members and partners. This will support mechanisms and platforms for convening members and partners to develop innovative ideas, and demonstrate the power of university-generated analytics and knowledge to provide decision-support tools, policy advice, systems that enable universities improve their operations, and influence communities as users of knowledge.

Since ICT forms a pivotal aspect of the K-Hub and is a factor for transformation of the network institutions, the RUFORUM Secretariat conducted an ICT capacity study in order to document status of ICT development within the RUFORUM member institutions and provide recommendations for knowledge sharing and targeted interventions. The study was designed to explore three areas namely; ICT readiness, ICT use, and ICT capability, which are deemed to explain possible impact of ICT adoption in the network. This report presents analysis of the results of the study, which is expected to produce knowledge on the ICT gap within the RUFORUM Network. The report is to complement initiatives designed to guide the Secretariat and the institutions on effective planning for ICT investment and use.

For example, the result of this study will complement the establishment of the regional data Hub at the Secretariat and support the effective development of platforms and services to facilitate universities to innovatively use ICTs to improve university teaching (e-Learning), research (e-Scholarship) and community outreach (e-Extension) as well as administration (e-Governance). This report contains points of action and emerging issues from the analysis of the result of the study.

2. The Problem

Several attempts to adopt ICT to support university service delivery has often meant challenges because of a number of reasons. The main obstacle to effective integration of ICT into university services is lack of capacity in terms of ICT infrastructure, ICT skills, and policy environment, among others. In order for effective investment, it is important to for decision makers to understand the underlying conditions in each of the institutions. The study therefore was meant to examine the capacity gap within the RUFORUM network to guide decision making.

3. Objectives

The main objective of this study was to examine the capacity gap within the RUFORUM network to guide decision making. Specific objectives of the study were to:

- Examine the state of ICT infrastructure within the member universities
- Determine the level of integration of ICT in the universities' core business activities
- Establish the impact of ICT use within the member universities
- Examine the factors influencing the adoption and integration of ICT
- Make recommendation for needed actions for ICT integration

4. Methodology

This study was theoretically underpinned by the ICT Development Index (IDI)[1], which was developed by the International Telecommunication Union (ITU). The IDI conceptual framework (see Figure 1) outlines three key factors to consider in realizing reasonable impact of ICT in a society.

The primary methodology for the study was gathering of responses through the distribution of questionnaires via the online portal (survey monkey) and elite and specialized interviewing, based on visits to some of the RUFORUM member universities.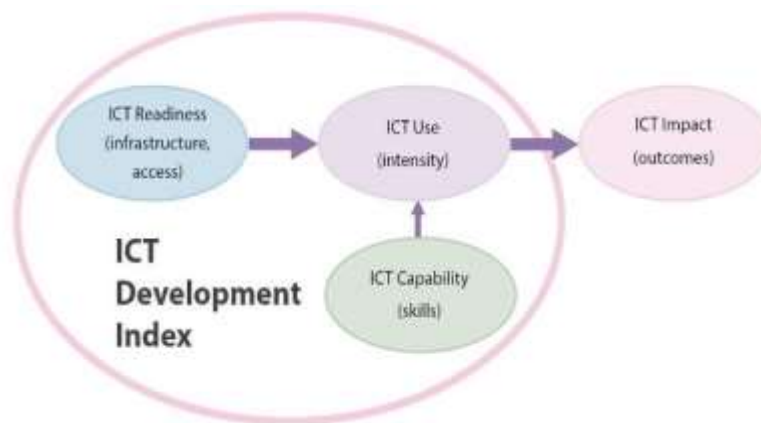 However, interviews were not possible due to COVID-19 restrictions. The study was to target 100-percent coverage of the member universities. However, we had responses from 19 institutions (15%). Standard sets of questions were developed for the three targeted respondents at each institution. These included ICT Directors, Dean of the School/Faculty or RUFORUM focal person, and Vice Chancellor/head of institution

Figure 1 ITU ICT Development Index

[1] ITU (2009): The ICT Development Index (IDI): conceptual framework and methodology https://www.itu.int/en/ITU-D/Statistics/Pages/publications/mis2016/methodology.aspx

The data has been analyzed with relatively simple methods, summarizing numbers, percentages, and categories of open-ended responses.

The questionnaires were a mixture of open- and closed-ended questions focusing on five areas; ICT readiness, ICT use, ICT capability, ICT impact and RUFORUM Knowledge products. ICT readiness contained questions reflecting on the level of networked infrastructure and access to ICTs (policies, structure, infrastructure and access). ICT use contained questions on the level of use of ICTs in the member institution. ICT capability contained questions which capture the capabilities or skills which are important for effective deployment of ICTs.

5. Analysis of the Findings

Summary of the responses:

Number of valid survey respondents: 20
Completion rate: 80%
Number of institutions: 19
Number of countries: 13

5.1. ICT readiness

As indicated earlier, the ICT readiness questions were meant to reflect on the level of networked infrastructure and access to ICTs including needed policies, structure, infrastructure and access. As such we examined the availability of ICT strategic plan, ICT policy, University e-learning policy, etc. as presented below.

5.1.1. ICT Strategic Plan

From the survey results, it was revealed that 70% of the institutions had an ICT Strategic Plan in place and 25% of the institutions had the ICT Strategic Plan under consideration whereas 5% of the institutions had no Strategic plan as shown in Figure 2.
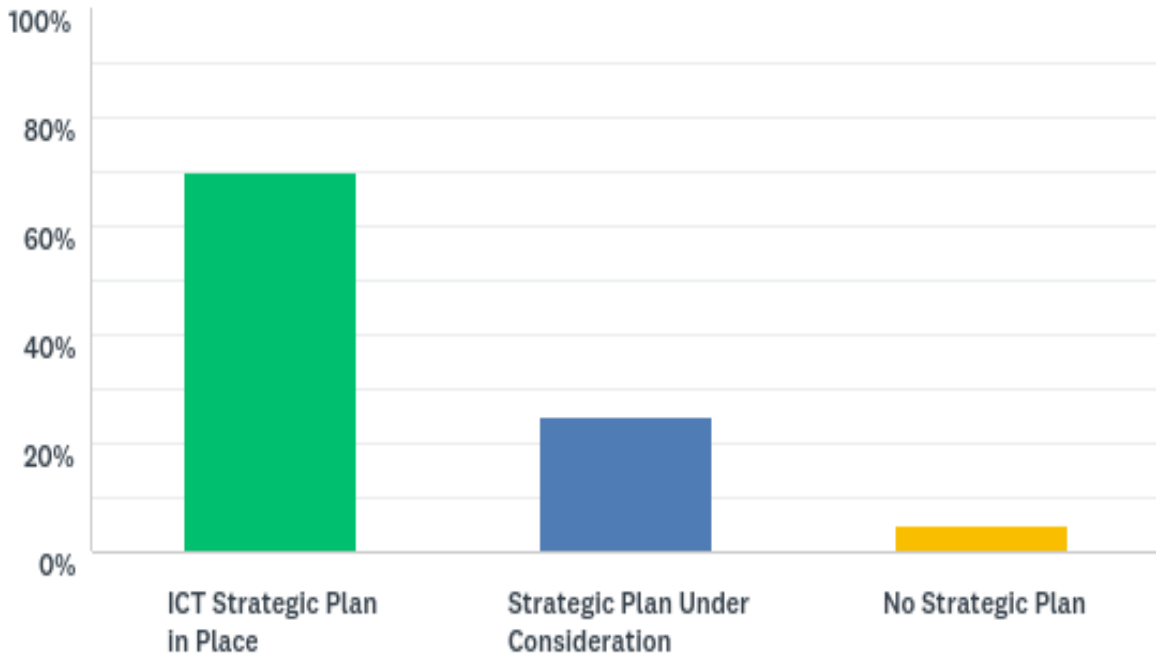
Figure 2 State of ICT Strategic Plan development in institutions

5.1.2. ICT Policy

Seventy percent (70%) of the institutions acknowledged in the survey to have an ICT Policy in place, 20% of the institutions indicated that they have the ICT Policy development under consideration while 10% of the institutions revealed that they had no ICT Policy in place as shown in Figure 3.
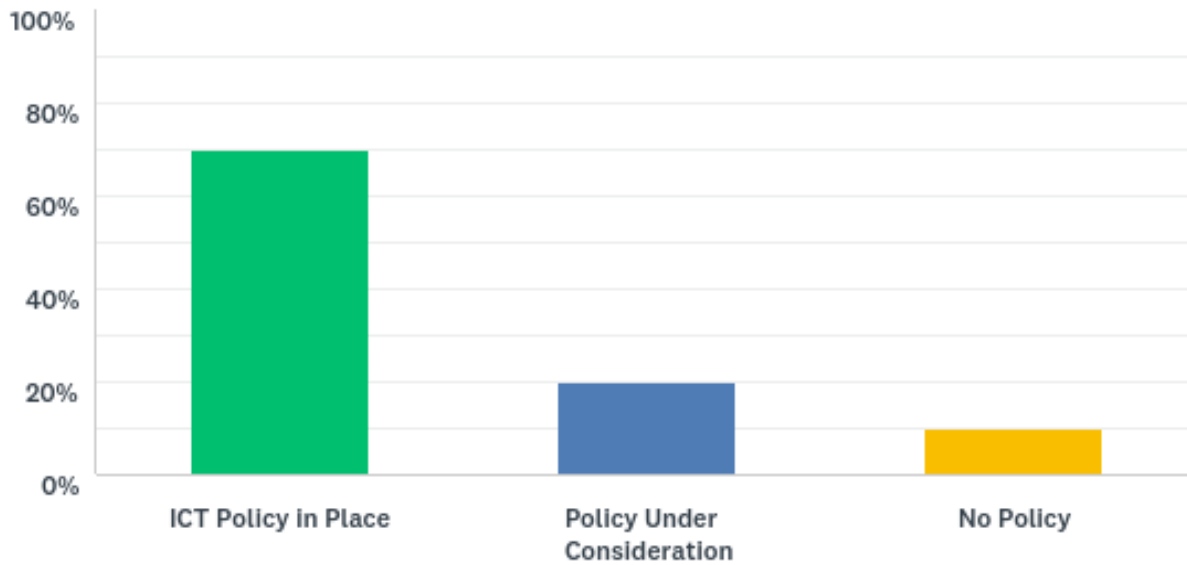
Figure 3 State of ICT Policy development in institutions

5.1.3. University e-learning policy

As shown in Figure 4, 55% of the institutions said they have an e-learning policy in place whereas 45% said **No**, they don't have an e-learning policy in place.
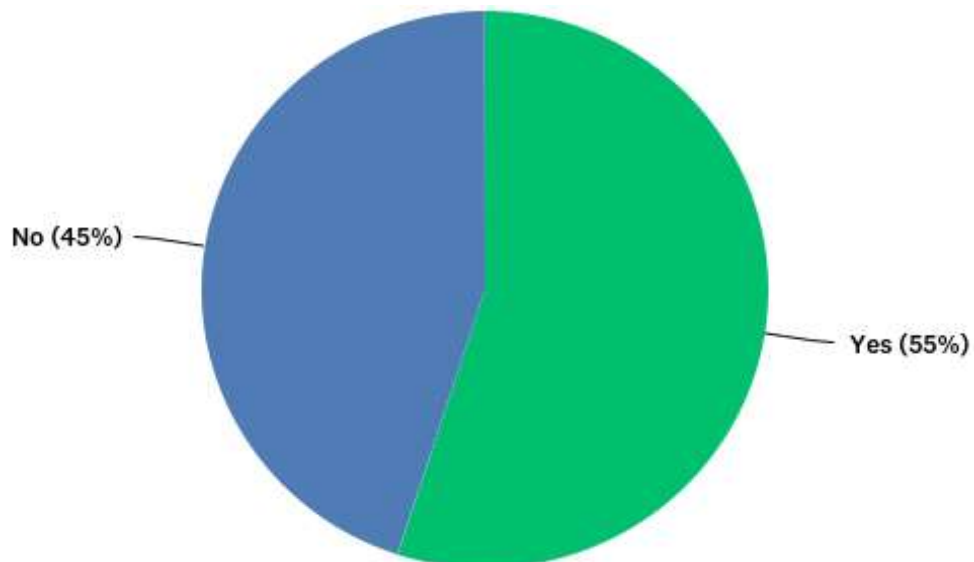
Figure 4 State of e-learning Policy development in institutions

5.1.4. Incentives for staff using ICT in teaching, learning or research

Thirty-seven percent (37%) of the institutions indicated that they provide incentives for staff using ICT in teaching, learning or research as compared to 63% who don't provide any incentives for ICT usage in teaching, learning or research as shown in the pie chart in Figure 5.
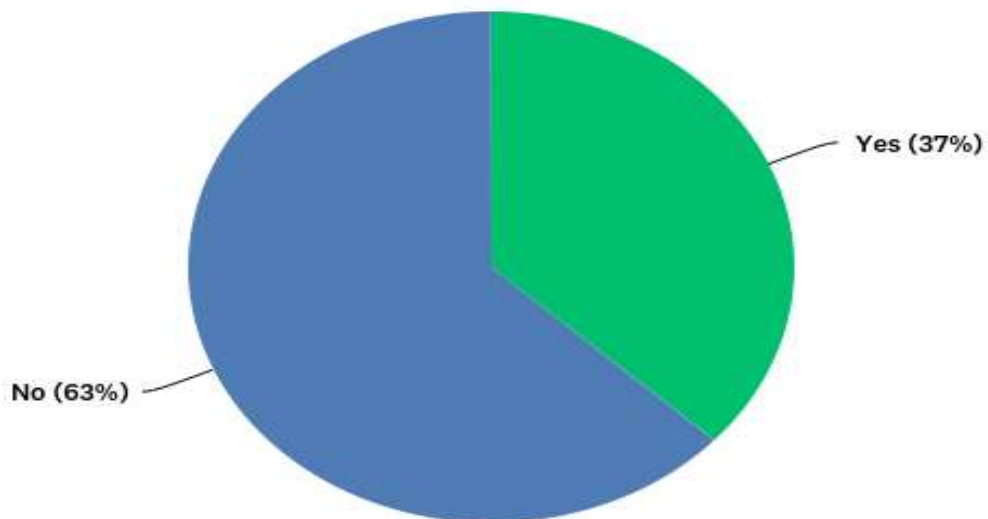
Figure 5 Provision of incentives for staff using ICT in teaching, learning or research

5.1.5. Connectivity to a fibre backbone

In regards to connectivity to the fibre backbone, 89% of the institutions said yes they had connectivity to the fibre backbone whereas 11% said no, they didn't have connectivity to the fibre backbone as shown in the pie chart in Figure 6.
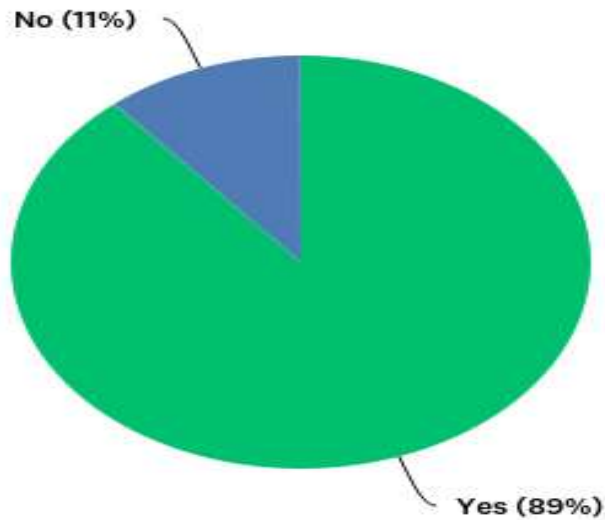
6

Figure 6 Connectivity to a fibre backbone

5.1.6. Total Internet bandwidth (Mbps) in the institution

Forty-seven percent (47%) of the institutions have a total bandwidth of at least 100Mbps, 37% of the institutions revealed to have a total bandwidth of between 10Mbps and 100Mbps, 16% said they have a total bandwidth between 1 and 10Mbps and none of the institutions had a total bandwidth of less than 1Mbps as shown in Figure 7.
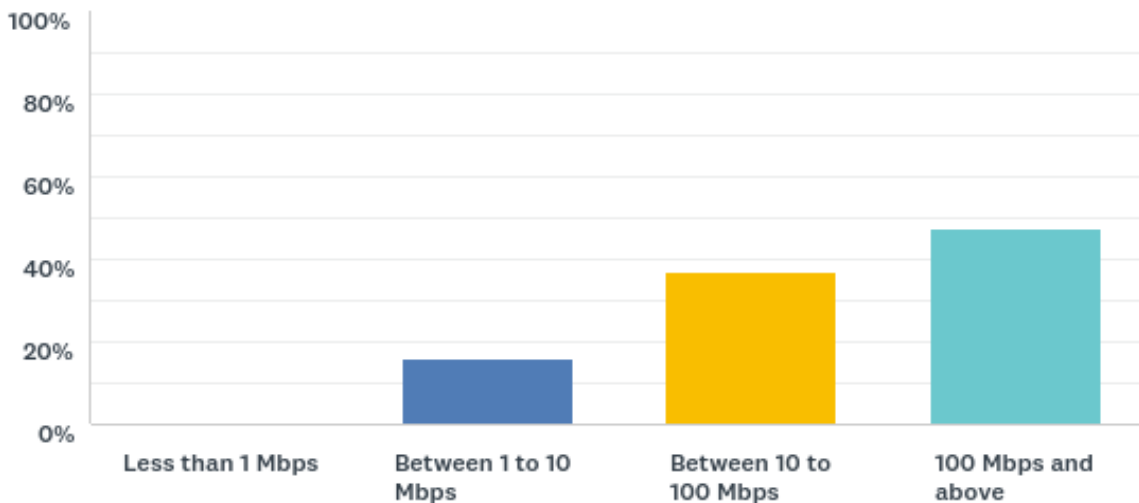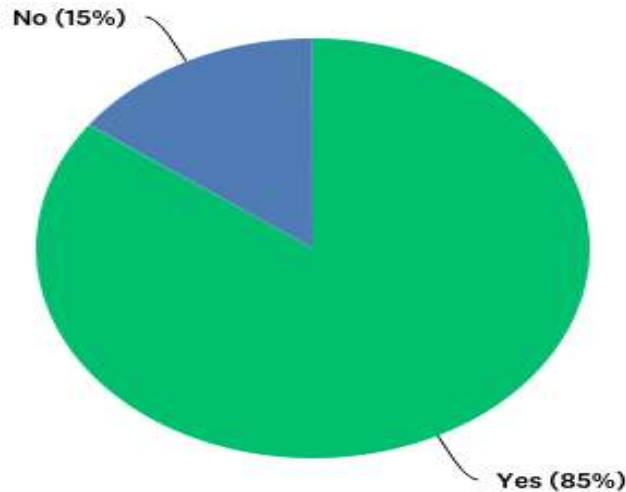

Figure 7 Total Internet bandwidth (Mbps) in the institution

5.1.7. Membership to a national research and educational network (NREN)

The percentage of insitutions which reported to be members of the National Research and Educational Network (NREN) was 85% as compared to 15% who indicated not to be members of the NREN as shown in Figure 8.

Figure 8 Membership to a national research and educational network (NREN)

5.2. ICT Capability

The questions under ICT capability were intended to determine the level skills and availability of computers in the member institution, etc. as presented below:

5.2.1. Percentage of non-ICT staff with basic ICT skills

The percentage of non-ICT staff with basic ICT skills was below 50% in 55% of the institutions whereas the institutions with 50% and above non-ICT staff with basic ICT skills was 45% as shown in Figure 9.
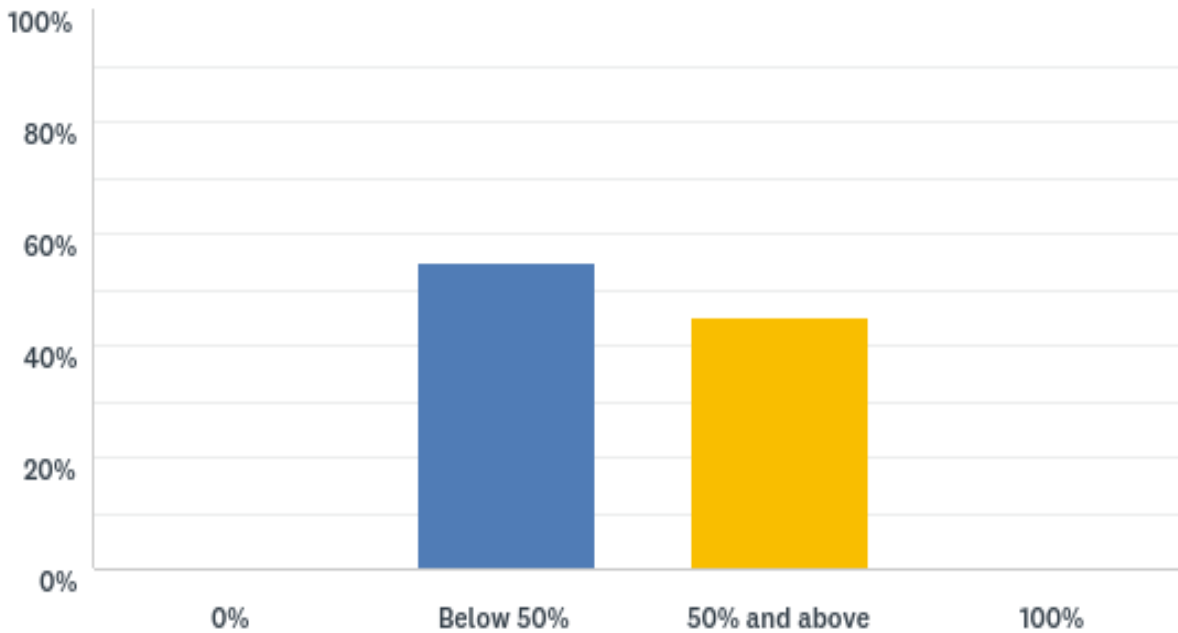
Figure 9 Percentage of non-ICT staff with basic ICT skills

5.2.2. Student – to - Computer Ratios for undergraduate students

Only 6% of the institutions revealed to have a 1 to 1 student to computer ratios in their undergraduate students, 22% had 2-5 to 1 ratios, 6% had 6-9 to 1 ratios whereas ratios of 10 to 1, 20-49 to 1 and 50 or more to 1 was each reported in 22% of the institutions as shown in Figure 10.
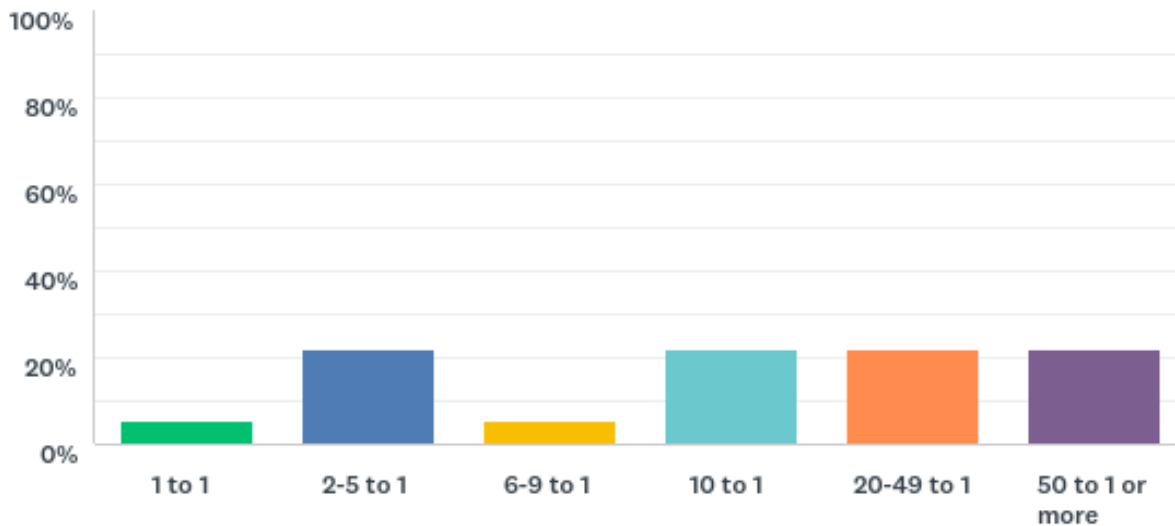

Figure 10 Student – to - Computer Ratios for undergraduate students

5.2.3. Student – to - Computer Ratios for postgraduate students

For postgraduate student to computer ratios, 22% of the institutions reported a 1 to 1 ratio, 39% reported 2-5 to 1 ratio, no institution reported 6-9 to 1 ratio, 6% reported 10 to 1 ratio, 22% reported 20-49 to 1 ratio and 11% revealed to have 50 or more to 1 ratios as shown in Figure 11.
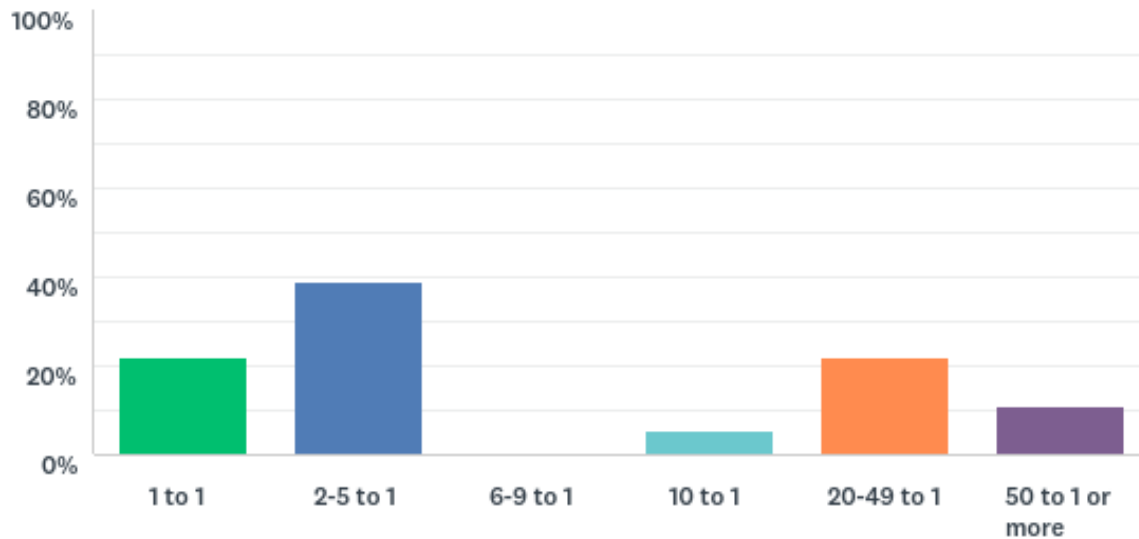

Figure 11 Student – to - Computer Ratios for postgraduate students

5.2.4. Academic staff – to – computer ratios

With academic staff to computer ratios, 41% of the institutions reported 1 to 1 ratio and also 2-5 to 1 was reported in 41% of the institutions. The ratio 6-9 to 1 was reported in 6% of the institutions whereas 12% of the institutions reported the ratio of 10 to 1. No institution reported the remaining ratios of 20-49 to 1 and 50 or more to 1 for academic staff as shown in Figure 12.
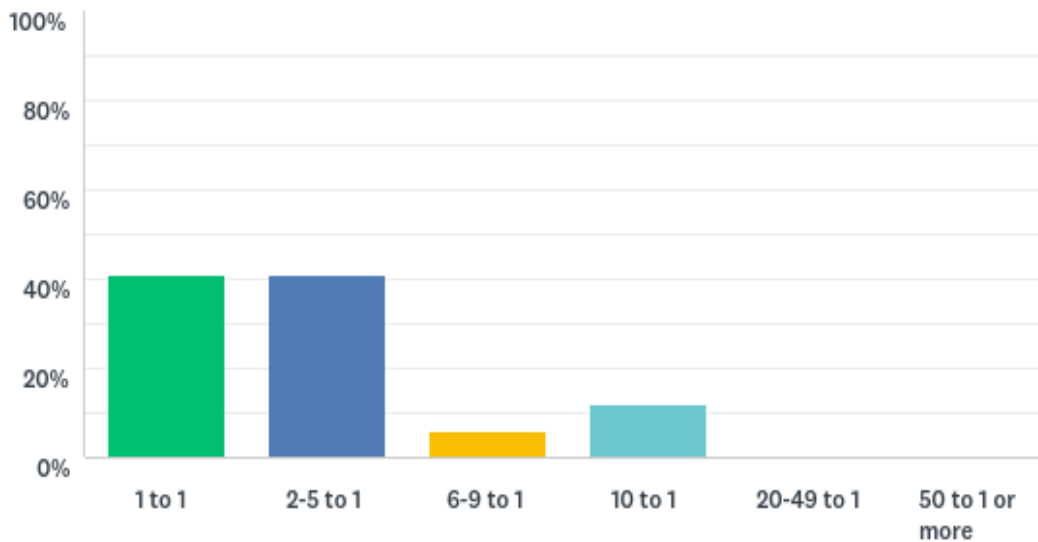

Figure 12 Academic Staff – to - Computer Ratios

5.2.5. Administrative staff – to – computer ratios

For administrative staff to computer ratios, 47% of the institutions reported 1 to 1 ratio, 2-5 to 1 was reported in 29% of the institutions. The ratio 6-9 to 1 was reported in 12% of the institutions whereas another 12% of the institutions reported the ratio of 10 to 1 for administrative staff. Just like academic staff, no institution reported the remaining ratios of 20-49 to 1 and 50 or more to 1 for administrative staff as shown in Figure 13.
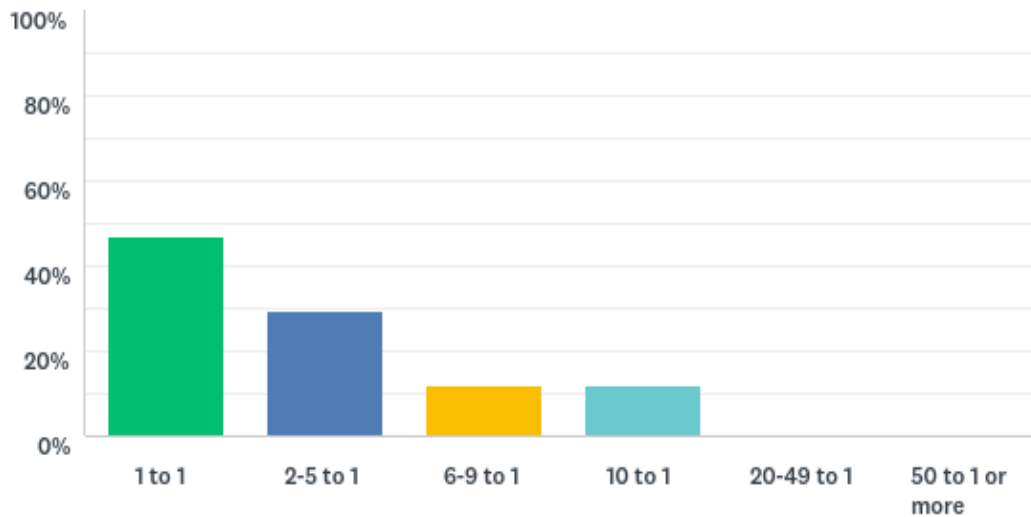

Figure 13 Administrative Staff – to - Computer Ratios

5.2.6. Plans to increase the number of computers

In relation to each institution's plans to increase the number of computers, a majority of the institutions, 41% proposed encouraging their students to buy their own computers, this was closely followed by 35% of the institutions who suggested seeking more computers from donors and lastly 24% of the institutions suggested that they planned to get more computers from their respective university budgets as shown in Figure 14.
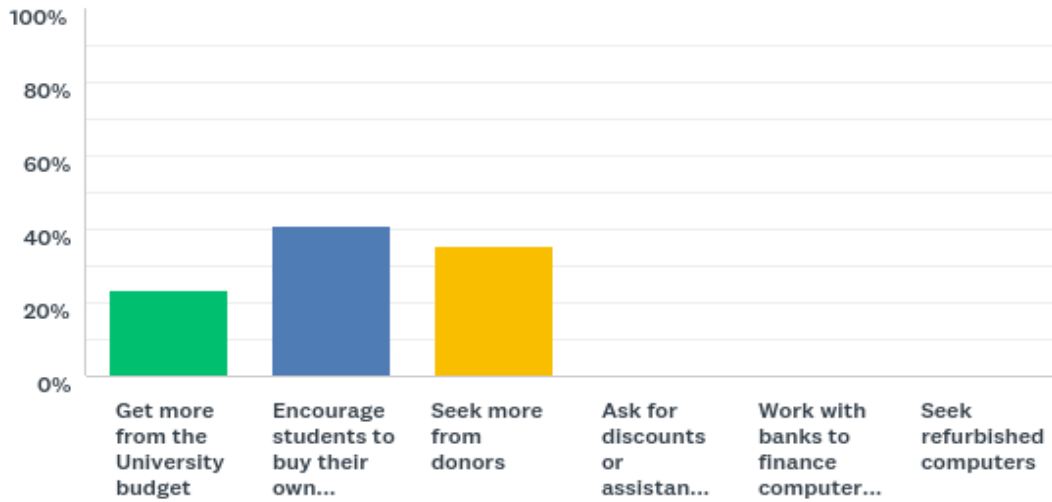
Figure 14 Plans to increase the number of computers

5.3. ICT Use (intensity)

5.3.1. Institutional email system

Ninety-four percent (94%) of the institutions revealed to have an institutional email system as compared to only 6% institutions which reported unavailability of an institutional email system as shown in Figure 15.
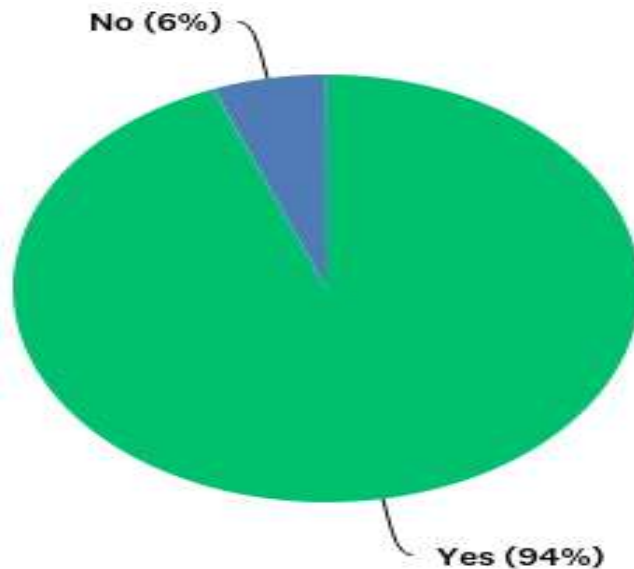

Figure 15 Institutional email system

5.3.2. Institutional e-learning platform

A majority of institutions, 60% to be exact revealed to have an e-learning platform as compared to 40% of the institutions without an e-learning platform as shown in Figure 16.
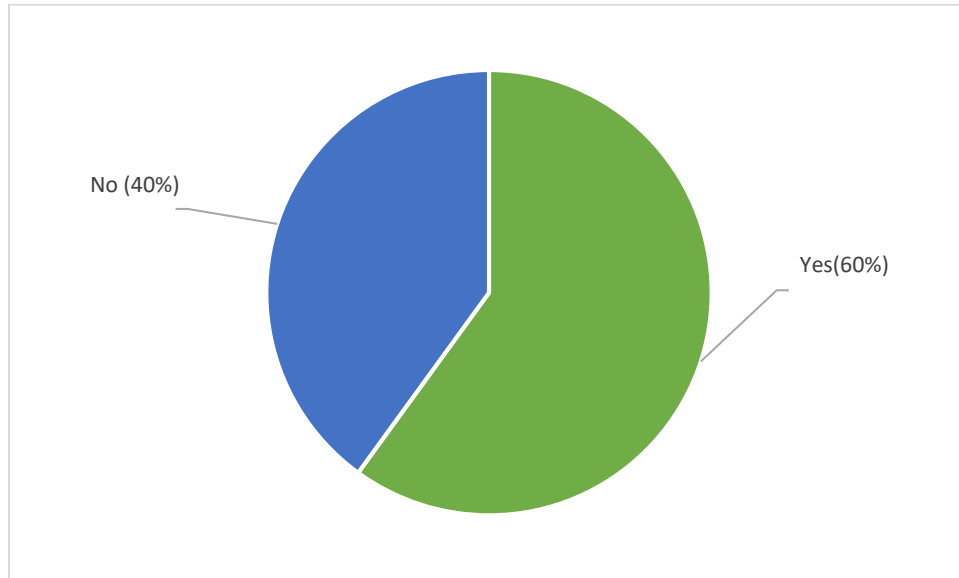

Figure 16 Institutional e-learning platform

5.3.3. Interactive website for the institution

The survey also revealed that 82% of the institutions had an interactive website whereas only 18% didn't have an interactive website as shown in Figure 17.
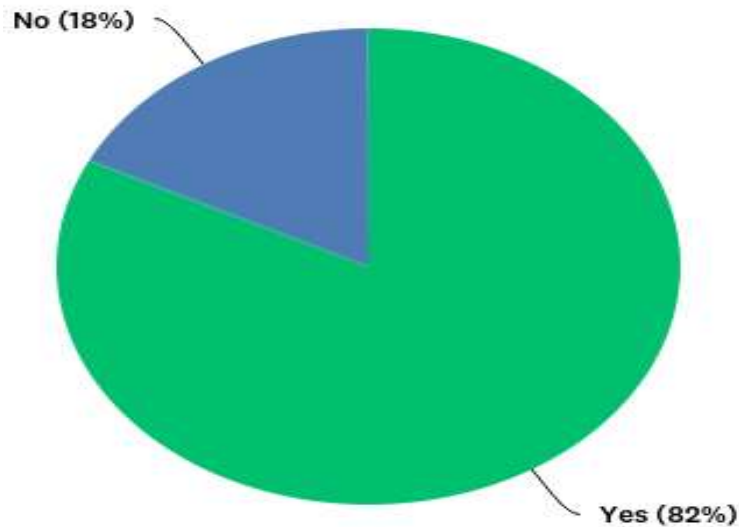

Figure 17 Interactive website for the institution

5.3.4. Use of ICT in the institution for community engagement activities

Social media presence and joint research projects emerged as the most common utilization of ICT for community engagement, each with 80% of the institutions reporting, 53% of the institutions reported the use of ICT by offering free online courses for community engagement while 27% revealed the use of e-consultation as shown in Figure 17.
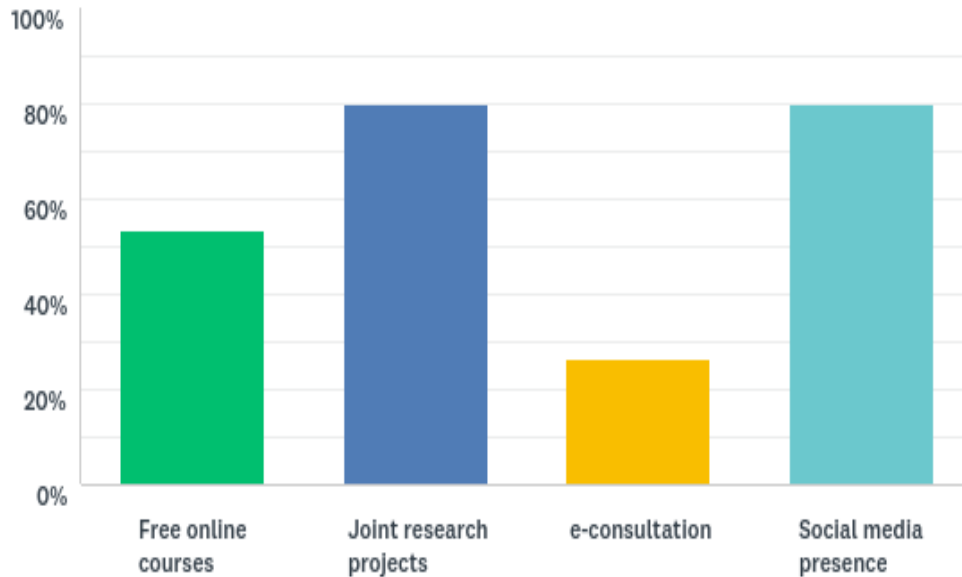

Figure 18 Use of ICT in the institution for community engagement activities

5.4. Access to RUFORUM Knowledge products
The question under this category aimed at determining the level of access to the main RUFORUM knowledge products

5.4.1. Access to RUFORUM knowledge products
Each institution was asked to select which of the RUFORUM knowledge products they often access, 100% of the institutions reported that they often access the RUFORUM website, 67% of the institutions revealed access to the RUFORUM repository, 60% reported access to the RUFORUM social media sites while 53% of the institutions revealed that they often access the RUFORUM blog as shown in Figure 18.
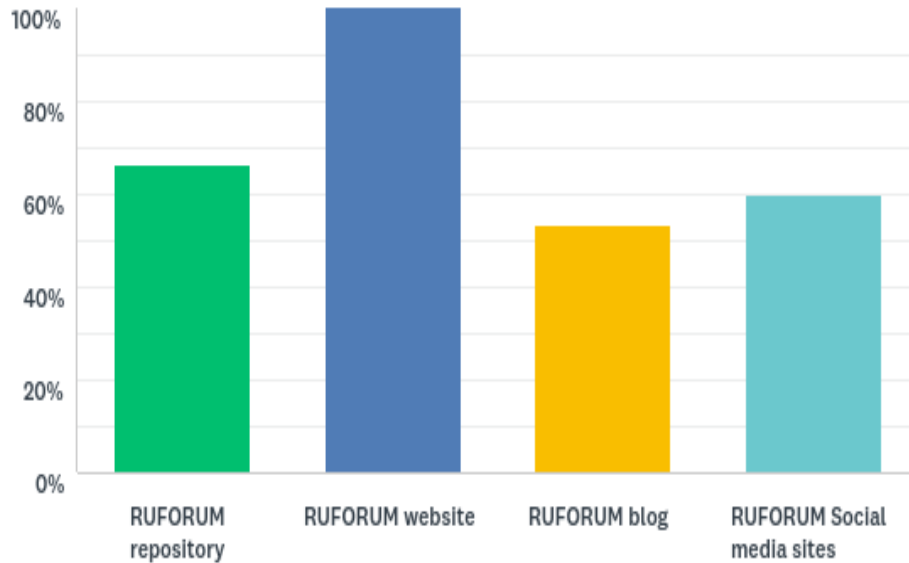
Figure 19 Access to RUFORUM knowledge products

6. Recommendations

From the findings analyzed above, the following recommendations can be drawn:

6.1. ICT readiness

Universities should do more in terms of ICT readiness by putting in place appropriate environment in terms of policies and infrastructure especially for teaching and learning. The study shows that although efforts have been put in place to enable ICT adoption, more still needs to be done in terms of e-learning as only 55 percentage of universities have indicated they have e-learning policy. Effective teaching and learning cannot happen without having a well thought policy.

6.2. ICT capability

Universities are strongly encouraged to provide adequate training especially to non-ICT staff. Other studies reveal that low level of skills among staff affect adoption of ICT in an institution. With more institutions (55%) having less than 50% of the basic ICT skills, there is a course to worry and a deliberate effort should be immediately undertaken. There is also need to increase the number of computers accessible to both staff and students. To achieve this more ICT funding is called for.

6.3. ICT use

Institutions need to integrate use of ICT in all their activities including teaching, learning, research, community engagement, and administration. The fuller the institutions integrate ICT, the better their services and the more efficient they become. To achieve this, there should be functional email, elearning, financial, academic and other platforms to support service delivery. The more intense the ICT use, the higher the impact as depicted in the ITU model.

6.4. Collaboration and Fund raising

6.4.1. RUFORUM Secretariat should facilitate collaboration initiatives to enable lesson sharing and develop possible mechanisms for resource sharing

6.4.2. RUFORUM Secretariat should reach out to development partners to mobilse funding to promote use of ICTs within its network member universities

Conclusion

The RUFORUM Secretariat conducted an ICT capacity study in order to document status of ICT development within the RUFORUM member institutions and provide recommendations for knowledge sharing and targeted intervention. The study is designed to explore these three factors (namely; ICT readiness, ICT use and ICT capability) whilst exploring possible ICT impact within the network. The result of this study will complement initiatives designed to guide the Secretariat and the institutions on effective planning for ICT investment and use in the RUFORUM Network. For example, the result of this study will complement the establishment of the regional data Hub at the Secretariat and support the effective development of platforms and services to facilitating universities to innovatively use ICTs to improve university teaching (e-Learning), research (e-Scholarship) and community outreach (e-Extension) as well as administration (e-Governance).

RUFORUM Secretariat, May 2020