UGANDA INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY (UICT)

ICT SKILLS AND TRAINING ACTION PLAN

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LIST OF ACRONYMS

4IR	Fourth Industrial Revolution
AFRALTI	African Advanced Level Telecommunications Institute
AITI-KACE	Ghana-India Kofi Annan Centre of Excellence in ICT
BPO	Business Process Outsourcing
COVID-19	Corona Virus Disease 2019
EAC	East African Community
EDI	E-Government Development Index
FGD	Focus Group Discussion
GII	Global Innovation Index
HR	Human Resource
ICDL	International Computer Driving License
ICT	Information and Communications Technology
IDI	ICT Development Index
ITU	International Telecommunications Union
KII	Key Informant Interview
MAAIF	Ministry of Agriculture Animal industry and Fisheries
MDAs	Ministries, Departments and Agencies
MoES	Ministry of Education and Sports
MoICT & NG	Ministry of Information & Communications Technology & National Guidance
MoU	Memoranda of Understanding
NARO	National Agricultural Research Organisation
NDP	National Development Plan
NIISP	National ICT Initiatives Support Program
NITA-U	National Information Technology Authority – Uganda
SCBF	Skill and Competency-based Framework
STA	Skills and Training Needs Assessment
STAP	Skills and Training Action Plan
UCC	Uganda Communications Commission
UICT	Uganda Institute of Information and Communications Technology
UNESCO	United Nations Scientific Culture Organisation

FOREWORD

The Uganda Vision 2040 identifies Information and Communications Technology (ICT) among the key fundamentals pillars to spur Uganda's transformation into a modern and prosperous country. The Third National Development Plan (NDP III, 2020/21-2024/25) also identifies ICT as a fulcrum of development, an accelerator, amplifier, and augmenter of change, and a sector with a huge potential to improve national productivity by making Government and business enterprises more efficient, effective and globally competitive. Both the National Resistance Movement (NRM) Manifesto (2021-2026) and the Parish Development Model, re-emphasize the role of ICT and human capacity development as strategic pillars for social and economic transformation of the nation into a middle-income country.

Despite the above, various studies however continue to indicate that majority of fresh ICT graduates lack employable skills necessary to cause an immediate impact in their new working environment. Furthermore, inadequacy of a critical mass of ICT skilled professionals such as; Data Scientists, Cyber Security specialists, Enterprise software developers, Multimedia content specialists, Artificial Intelligence specialists, among others has negatively impacted the implementation of most Government ICT projects and initiatives, thus slowing down national development.

In line with the mandate entrusted to it, Uganda Institute of Information and Communications Technology (UICT) in search of solutions to the above, commissioned a Training Needs Assessment (STA), which findings culminated into this ICT Training Action Plan (STAP). The main aim of this study was to identify priority ICT basic, special, expert and professional training programs for both formal and informal sectors of the Ugandan economy, and the HR capacity requirements specific to UICT. The actions herein recommended are key in guiding UICT to design and implement robust curricula, aligned to the ecosystem demands and the country's development agenda and establish program delivery frameworks, which are contextualized to the various needs of the market segments. This ICT STAP is premised on the understanding that an evidence-based ICT skills development framework will facilitate the nurturing of a competitive human resource and contribute to making Uganda a preferred destination for foreign direct investment in ICT sector and other associated industries, besides improving government efficiencies.

I therefore call upon UICT Staff, Management and the Governing Council to take this ICT STAP as a reference in the development of market driven programmes, establishment of innovative programme delivery chains, strategic partnerships and innovation of new services to be provided by the Institute. This ICT STAP is as well an effective guide to UICT management in other areas of action, including advocacy for national and institutional policy reforms, staff development initiatives, among others.

Dr. Fredrick Kitoogo
PRINCIPAL UICT

EXECUTIVE SUMMARY

This ICT Skills and Training Action Plan (STAP) has been developed basing on the key recommendations from the ICT Skills and Training Assessment (STA), which was conducted in from January to May 2022. The STAP is designed with a specific focus of guiding the UICT to develop of a robust curriculum and programmes, which will be implemented in nurturing a competitive ICT human resource base for national growth. The development of ICT STAP was guided by the following objectives:

i)   To develop an ICT Skilling Training Action plan with its associated implementation framework for implementing recommendations arrived at during the gap analysis; and

ii) To identify priority ICT training programmes and other capacity building interventions targeting UICT staff so as to enable UICT deliver the identified recommendations.

In terms of methodology, the following steps were undertaken in to develop ICT STAP i) Workforce profile analysis in the target sectors, ii) Forecast of future ICT skill and knowledge needs in selected sectors, iii) Analysis of the existing ICT knowledge and skill gaps targeted sectors, iv) Team co-creation workshops and v) benchmarking. To facilitate realization of ICT STAP, two other steps were undertaken, notably development of implementation framework and associated Monitoring and Evaluation Mechanism.

Furthermore, in order to address the identified gaps among the target group, a competence-based skills framework to guide UICT programs was developed and the key drivers of change in the ICT sector were identified along with associated strategic actions; all linked to the strategic objectives.

Based on the study findings as stipulated in subsections 2.1-2.13, an action plan has been put in place arranged according to the said strategic objectives and actions for the attention of UICT as the key actors below:

Strategic objectives	Strategic Actions	Actors
To contribute to Human capital development in line with the National Development Agenda	- Contribute to the development of a national ICT skills framework for both ICT and Non-ICT professionals. - Design flexible and practical curricula inclusive of short and long courses targeting in-service and pre-service trainees, career transitionists, etc. - Sustain and upscale the current (ongoing academic programmes) at the Institute. - Develop Quality assurance framework aligned to National aspirations and regulations. - Set up online training programmes for various government agencies in areas where capacity gaps have been identified. - Develop an e-government curriculum aiming as accelerating update of government digital services. - Develop and mainstream into all curricula align to key international Digital Literacy Skills Framework which	NITA-U & UICT Management

Strategic objectives	Strategic Actions	Actors
	incorporates best practices from the different international frameworks such as ICDL and the National Local Content Policy.	
To enhance UICT human resource capacity	- Recruit, develop and retain a critical team of professionals in the specific skill areas. - Promote staff industry attachment to enable staff acquire critical industry level knowledge and skills. - FastTrack implementation of targeted training interventions for the various categories of staff as provided in the UICT Organizational Restructuring, Job Evaluation and Job Grading Report (2021, Subsection 11.6). - Train Staff on the current policies such as ICT policies, among others. - Restructure the current staffing structure to cater for the expansion or inclusion of satellite centers resources. - Ensure all UICT staff should complete a minimum of 40 hours of ICT CPD annually. The institute should set up an online tracking portal for this CPD on each individual staff. - Provide staff capacity building in the areas of Consultancy skills, Online Pedagogy, Social media and brand development, team building and professional development. - Promote and encourage staff to undertake graduate studies especially at PHD level to improve their research capacity. - Encourage staff to acquire industrial certification to improve their knowledge and skills of developing and delivering market demanded training content.	UICT Management and Staff
To develop and deliver demand driven training, research and consultancy services	- Adopt flexible delivery approaches involving online and face to face training. - Franchise some of the readily available international certification programs especially in areas of BPO, data science, cyber security, among others. - Develop tailor made short courses (combining online and face to face training approaches), targeted at the various levels of employees in organization (strategic leadership, senior management, ICT and non-ICT professionals). - Establish and consolidate strategic partnerships with related institutions in the region in order to deliver on demand specialized programs in Telecommunications, Broadcasting, Postal, Radio, Creative Industry, Multimedia, and Communication Officers, among others. - Partner with both private and public institutions focused on provision of ICT skills to deliver some of these programs to government employees for example Civil Service College Uganda - FastTrack adoption and implementation of courses contained in the ITU-Digital Transformation Centre (DTU) Training Catalogue (2021). - Conduct regular curriculum review in consultation with stakeholders. - Update UICT curriculum and its delivery with industry demands and incorporate industry experts in program delivery on per cohort basis. - Mainstream the certificate in Knowledge Management program as a short course. This can be achieved in affiliation with the	UICT Management

Strategic objectives	Strategic Actions	Actors
	Association for Intelligent Information Management (AIIM) for certification in knowledge management.	
To enhance the quality and employability of UICT graduates	- Enhance the UICT infrastructure so as to ensure that all academic programs have appropriate ICT infrastructure such as specialized laboratories to deliver the proposed curricula at all times.	UICT Management and Staff
	- Regularly review both the infrastructure and curriculum every 3-year ascertain the functionality of the infrastructure to support continued teaching of the approved curriculum, given the backdrop that technology continually improves and the fact that most ICT equipment has a 3-year lifespan. - Improve management and supervision of student field attachment to ensure meaningful engagement of students in their respective fields of study. - Engage both public and private sector stakeholders in Curriculum development, professional development, Internship Placement, Research and Innovation - Implement a student-centered problem-based learning approach to promote skills development. Relatedly, promote practical or competence based academic progression assessment as opposed to theoretical examinations.	UICT Management and Staff
To position UICT as a regional center of excellence in digital skilling and associated professions	- Equip existing specialized labs with relevant equipment's to enhance skills development and transfer to learners. - Regularly conduct research about best practices in other countries and develop appropriate interventions. - Establish satellite training centers in strategic locations in the country to cater for emerging market segments. - Develop and implement a market expansion strategy using most cost-effective platforms for example use of social media, MDA structures and government online systems to advertise programs, stakeholder outreach information sessions and free introductory trainings, etc. - Lobby decision makers on MDAs and LGs to make UICT their partner in ICT capacity building in their sectors/organizations - Expand partnership horizon to include willing scholarship partners such as ENABEL and UNESCO who have focus on digital literacy skills development - Establish institute scholarship fund targeting best performing applicants and special interest groups like Refugees. - Lobby UCC for increased sponsorship budget especially targeting priority sectors of government employees. - UICT should increase participation in industry-based events to increase brand visibility.	UICT Management

These strategic actions are estimated to cost a tune of **UGX 7.61 Billion** over a period of 5 years.

1.0   CONTEXT TO THE ICT SKILLS TRAINING AND ACTION PLAN

The Government of Uganda, through various development instruments, notably Uganda Vision 2040, Digital Uganda Vision, the Third National Development Plan, 2020/21-2024/25, National ICT Policy, 2014, E-government Policy Framework, 2011, NITA-U Act 2010 and UCC Act 2013, has earmarked ICT skills development as a critical pillar for transformation of the country into a knowledge based middle income, globally competitive economy. Under the Digital Transformation Programme of the Third National Development Plan (NDP III), The Government is implementing various initiatives to accelerate the development of ICT innovation and ICT human capacity, expansion of the national backbone, increase access to computing devices and infrastructure, lower the barriers to ICT service access and promoting consumption of digital services in the country among others. All these efforts are geared towards improving government efficiency and effectiveness, reduction of corruption and resource wastage in government.

In order to contribute to government results framework in the development agenda, UICT conducted an ICT Skills and Training Needs Assessment for target sectors critical for the implementation of the national development agenda, and it is on the basis of these recommendations that this ICT Skills and Training Action Plan (STAP) is prepared.

1.2   Justification for development of ICT STAP

UICT is currently pursuing a turnaround strategy with the overall objective of transforming the institution into a model center of excellence in the region in areas of; ICT skills development, research and consultancy. Thus, UICT conducted an ICT Skills and Training Assessment (STA) which revealed a number of opportunities in the areas of ICT skills development and therefore, there was a need to operationalize the recommendations of the STA into and action plan to guide the implementation of the recommendations by UICT management.

1.3   Objectives of ICT STAP

The overall objective of this action plan is to define priority ICT training programmes for both formal and informal sectors as well as define UICT staff capacity development initiatives. The specific objectives of UICT ICT Skills and Training Action TAP are to:

i)   Develop an ICT Skilling Training Action plan with its associated implementation framework for implementing recommendations arrived at during the gap analysis.

ii) Identify priority ICT training programmes and other capacity building interventions targeting UICT staff so as to enable UICT deliver the identified recommendations.

1.4   Scope of ICT STAP

The ICT STAP mainly covers two key areas; a) priority training programmes demanded by the market and b) internal human capacity building needed by UICT staff to prepare UICT to meet the market demands targeting ICT Professionals, Researchers and

Consultants working in the Education sector, ICT products and service vendors, Agriculture, Oil and Gas industries Manufacturing, Health sectors in Uganda.

1.5   Approach and Methodology for developing ICT STAP

This ICT Skills and Training Action Plan (STAP) identifies appropriate knowledge and skill sets ideal/desire by the target categories of professionals and defines strategic actions which UICT should implement to meet her strategic objectives. Thus, the following approaches and methods were used to prepare this STAP:

a) **Workforce profile analysis:** This was undertaken in order to establish key market drivers that could affect the future supply and demand for ICT skills in the country. This was achieved through UICT SWOT and PESTEL Analysis:

i. *SWOT Analysis:* The **Strength, Weaknesses, Opportunities and Threats** analysis was used to evaluate the internal and external environments of target sectors of Education, Agriculture, Oil and Gas, Manufacturing, Health and ICT (telecom, consulting and research firms, system developers, among others). The purpose was to establish the key drivers and hindrances to having a highly skilled and knowledgeable ICT workforce in the target sectors. The SWOT analysis was first applied on the results of the desk review, stakeholder analysis and international benchmarking reports. Then, the results of this initial review, formed the basis for a stakeholder-based SWOT analysis to validate, refine and enhance initial results.

ii. *PESTLE (Political, Economic, Social, Technological, Legal and Ecological) Analysis:* PESTLE analysis describes a framework of macro-environmental factors used in the environmental scanning component of strategic management. This technique was used alongside SWOT analysis in the study of internal and external environment of the current ICT workforce in the targeted sectors. The purpose of PESTLE was to identify all the various external political, economic, social, technological, legal and environmental factors that might affect an organization/ business. UICT is expected to assess and utilize this knowledge to develop her program offering to the market.

The above analysis enabled the identification of:
- Key ICT workforce segments critical to achieving the visions and missions of target institutions and UICT in specific.

- The behaviors and skill characteristics required by the targeted sectors/ market segments;

- Assumptions about future demand for ICT services in the country and;

- The key segments of the ICT workforce that would be most critical to individual organizations.

b) **Forecast of future ICT skill and knowledge needs**: From both government and private sector organizations, identification of the ICT knowledge and skill sets required by the future workforce to deliver the organizations' future ICT mission and work requirements was done. The following techniques were heavily employed to achieve the desired ICT forecast.

   i. **Literature review**: Explorative Literature Review Framework was conducted in line with the objectives of the STAP. A number of national, regional and international official documents were reviewed, such as African regional and national ICT sector trends in terms of ICT Policy frameworks, internet connectivity, ICT supply and access. Other documents reviewed were; ICT related Policies, Laws and Regulations, Strategic Plans and Reports and scholarly publications. Given the centrality of UICT to the study the Institute Strategic Plan 2020/21 – 2024/25 and other related official documents were prioritized for review. The Skills Framework for the Information Age (SFIA), ICDL, UNESCO Digital Skills Framework and the Fourth Industrial Revolution for the Earth[1] among others were reviewed to establish the ideal skills and competencies of the various professionals in the target sectors. Based on SFIA and other skills and competence reference guides, and institutional responses on the desired skills, associated skill gaps of various categories of employees in the organizations were established. The ICT Skills and Competence Framework for UICT was developed

   ii. **Key Informant Interviews** were conducted to aid the establishment of the current (AS-IS) and the desired (TO-BE) state of ICT Skills development needs of the ICT Professionals, Researchers and Consultants from the perspective of sector opinion leaders and institutional strategic vision bearers. From each participating institution (both government and private sector), responses were obtained from Board members, accounting officers and other senior management officials delegated by their accounting officers.

   iii. **Focus Group Discussion (FGD):** Online Focus Group Discussions were used for UICT leadership, management and staff, the BPO, UICT Alumni and current students. The purpose was to gather feedback from the respondents on the UICT training programme development and desired institutional changes among others.

c) **Scenario planning** was used to generate narrative statements of the possible future for the ICT skills demand in target sectors of Education, Agriculture, Oil and Gas, Manufacturing, Health and ICT (telecom, consulting and research firms, system developers, among others). In undertaking scenario planning, the following parameters were considered:

   - Key ICT professionals critical to achieving the visions and missions of the target sectors;

   - The knowledge, skills and behaviours characteristics desired of future workforce in a knowledge based digital economy;

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[1] Klaus Schwab (2017) *The Fourth Industrial Revolution*, World Economic Forum

- Assumptions about future demand for services; and

- The key segments of the ICT workforce that would be the costliest to lose or would be difficult to find.

d) **Development of strategies**: Strategies to address the identified ICT skill and knowledge gaps were developed and linked to the ICT knowledge and skill requirements as contained in the manpower plans of targeted institutions. Visioning and strategizing techniques were employed in coming up with comprehensive and responsive strategies. Key institutional and individual actors/stakeholders from the targeted sectors and UICT itself were engaged in collaboratively formulating the vision and strategies for achieving the desired ICT skills training programmes, applied research and consultancy competences and other capacity building interventions for UICT staff.

e) **Drafting the ICT Skills and Training Action Plan (STAP):** A combination of data from the Situation Analysis, Stakeholder Analysis, International Best Practices, Workforce Profile, future ICT workforce needs forecast, Gap Analysis and the visioning and strategy Reports provided detailed information that informed the development of the first draft of STAP. This was draft through team co-creation write shops and peer-output validation engagements.

1.6   Organisation of ICT STAP

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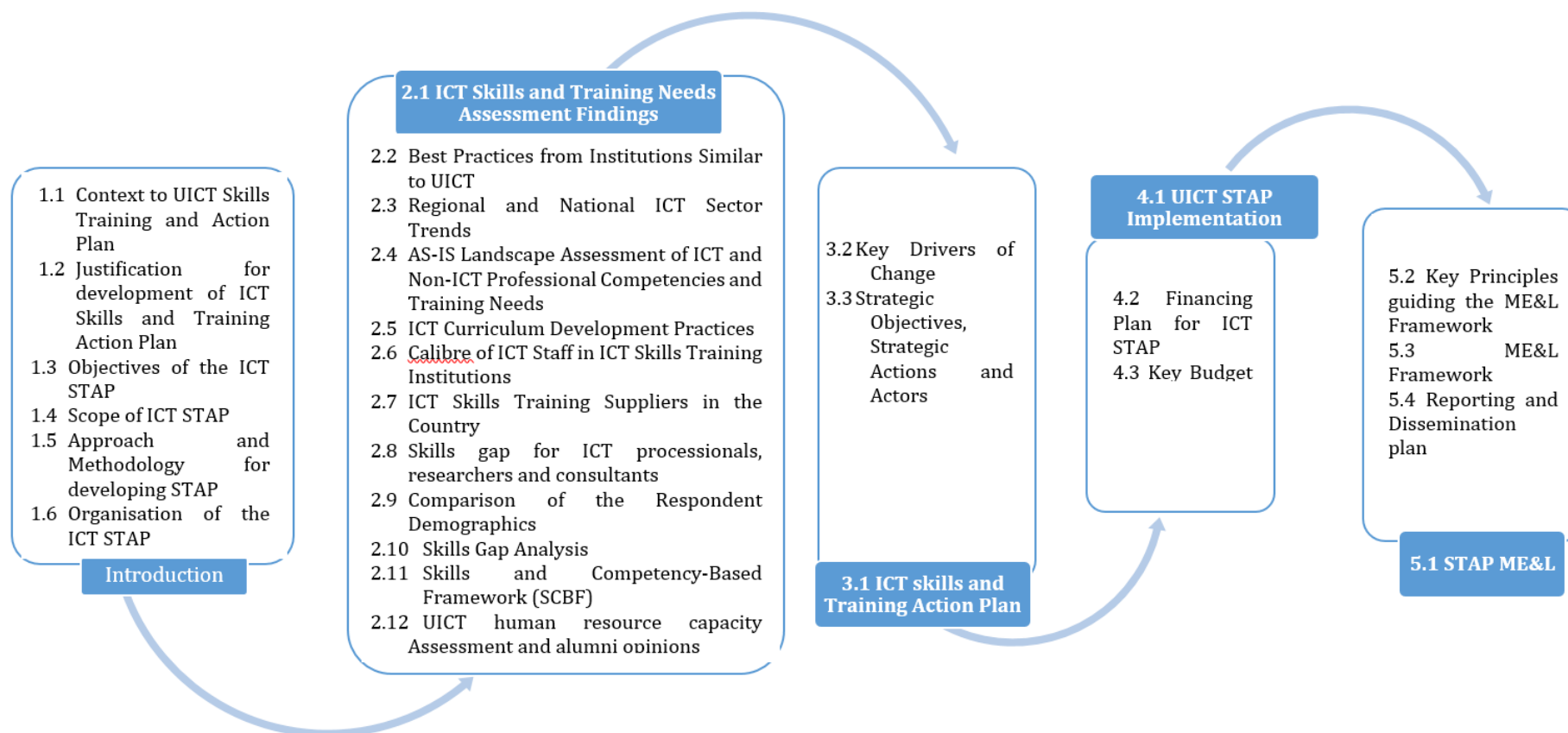
5.1 STAP ME&L

Figure 1: Organisation of ICT STAP

2.0 ICT SKILLS AND TRAINING NEEDS ASSESSMENT FINDINGS

In order to develop a pragmatic ICT Skills Training Action Plan (STAP) for UICT, an assessment of the ICT skills demand and supply patterns in critical sectors of the economy was conducted[2] . This section highlights the key findings of the ICT STA.

2.1 Best Practices from Institutions similar to UICT

In order to provide a continental context and appreciation of the trends in ICT skills development, an explorative desk research and key informant interviews were conducted on six (6) institutions with similar mandate and aspiration to UICT in five selected African countries. The review was based on their ICT ecosystem global rank on ICT development index (country rank), regional representation and comparative socio-economic ecosystem relative to UICT, and was guided by the International Best Practice Benchmarking Guide (Annex 5.3.7). The institutions are; Telkom Centre for Learning and Cape Peninsula University of Technology in South Africa, Ghana-India Kofi Annan Centre of Excellence in ICT (AITI-KACE) in Ghana, New Horizons Institute in Nigeria, African Advanced Level Telecommunications Institute (AFRALTI) in Kenya and Dar es Salaam Institute of Technology in Tanzania.

The best practices are categorized along the following thematic areas; 1) pedagogy approaches used, 2) E-learning adoption, 3) funding frameworks for digital skills development, 4) level of stakeholder participation in curriculum development and delivery, 5) nature of programs and services provided by that institution to the market, 6) approach to program promotion and marketing, and 7) approach to institutional human capacity development). The emerging best practices from the target institutions are summarized in Table 1 below.

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[2] UICT ICT Skills and Training Needs Report by UICT (June 2022)

Table 1: Best Practices from institutions similar to UICT

Thematic area	Best practices	Linkage to ICT STA Report
Pedagogy approaches	- Most of the professional certification and short courses programmes offered have short durations not exceeding 6 calendar months. - All institutions profiled are using student centered problem-based learning approaches aiming at knowledge and skills transfer to the learners. - Instructor-Led Training, Online LIVE, eLearning, On-Site Training and Private Class.	ICT STA Report subsections 3.1 & 4.1 (7)
E-learning adoption	- All institutions are delivering their programmes using blended training approach involving online learning and face to face interaction.	ICT STA Report subsection 3.1
Digital skills development funding frameworks	- The main source of funding for beneficiaries of programmes from these students is private sponsorship. - However, most countries benchmarked have some form of digital skills national funding mechanism targeting special interest groups like youth and government employees which these institutions compete for.	ICT STA Report subsection 3.1
Stakeholder participation in curriculum development and delivery	- In all institutions profiled, curriculum development follows an extensive stakeholder consultation process to establish level of needs, desired means of delivery, pricing modalities, among others. - In some institutions industry experts (stakeholders) do participate in curriculum delivery as part-time course facilitators through directly hiring or collaborative frameworks.	ICT STA Report subsection 3.1
Nature of programmes and services provided by that institution to the market	- All institutions develop market driven curriculum through extensive stakeholder consultation process, to establish level of needs, desired means of delivery, pricing modalities, among others. - Most of the institutions do also provide customized programmes to client on needs basis. - Most of the institutions also provide international certification testing center services. - Institutions on the continent with similar mandate and focus like UICT mainly run skills development programmes at diploma and certificate levels - All institutions benchmarked are running high value collaborative programmes (industry recognized certification programme) with leading industry players like Cisco Systems, Huawei academy, among others.	ICT STA Report subsections 3.1 & 4.1 (7)

Thematic area	Best practices	Linkage to ICT STA Report
Approach to programme promotion and marketing	- Most institutions are marketing their programmes through the web, social media and direct stakeholder engagements.	ICT STA Report subsection 3.1
Approach to institutional human capacity development	- All institutions have three categories of training staff; a) full time employees mainly on contracts, b) industry experts deployed on cohort basis (part time basis), and c) partner institutions' training staff engaged through MoU.	ICT STA Report subsections 3.1 & 4.1 (7)

2.2   Regional and National ICT Sector Trends

Table 2 below provides summary of the regional and national trends as per the ICT STA findings.

Table 2: Regional and National ICT Sector Trends

Parameter	Regional	National	Linkage to ICT STA Report
Internet connectivity, Digital service access and usage	Generally, at both regional and nation level all countries are witnessing an expansion of internet connectivity sites, increase availability of digital services especially those driven by FinTech Industry such as mobile money services. Generally, there is an upward trend in the access of usage of digital services. Furthermore, this is growing inter-state connectivity and capacities to facility cross board trade	Uganda is on track as in other countries in the region	ICT STA Report subsection 3.2.2
ICT policy frameworks	Most countries on African continent especially those in east African region have developed ICT policies focusing on positioning their countries as digital hubs in the region. Most countries are putting emphasis on human capital development, promoting development of homegrown ICT innovations, digital infrastructure and connectivity	The aspiration at the region are similar to those of Uganda	ICT STA Report subsection 3.2.3
E-governance	All countries in the region are promoting e-government as a mean of enhancing service delivery in terms of effectiveness and efficiency.	Uganda is on track as in other countries in the region	ICT STA Report subsection 3.2.3

Parameter	Regional	National	Linkage to ICT STA Report
Digital skills development	Most countries are taking a two-strategy approach to digital skills development; reforms of education sector to ensure graduates have relevant digital skill to be productive on day one, and the adaption of a re-skilling/ retooling frameworks. Also, countries are developing/adopting a formal digital literacy skills framework largely based on other international frameworks like ICDL Countries benchmarked on are designing and implementing digital skilling funding mechanism to accelerate the development of digital skills critical for national development agenda	Uganda is mainly promoting re-skilling/retooling approach to digital skills with slow actions on education sector reforms as the country does not have an Education Digital Agenda strategy. Currently Uganda does not have a formal national ICT skills framework for both ICT professional and non-ICT professionals.	ICT STA Report subsection 3.2.3

2.3 AS-IS Landscape Assessment of ICT and Non-ICT Professional Competencies and Training Needs

This section presents the AS-IS Landscape Assessment of ICT and Non –ICT professional Competencies and training needs as revealed from the Skills needs assessment.

a) There is insufficiency number of key ICT professionals in the country key among them include Data Scientists, Cyber Security specialists, Enterprise software developers, Multimedia content specialists, Artificial Intelligence specialists, among others. Majority of the organizations assessed (especial those in public sector) indicated that they were understaffed as far as ICT professional staff are concerned compared to their level of mandate and results framework.

b) Majority of senior management teams in institutions have basic skills and knowledge in office applications, email, web browsing and social media usage but are lacking sufficient knowledge in; IT strategic management, change management and IT leadership, among others.

c) There is no BPO and ITES industry skills development framework or programmes in the country. The only programme which was originally developed at Makerere University is no longer running, and few international programmes are not contextual to the industry needs. Currently, courses are available from BPO Certification Institute and Business Process Outsourcing by Udemy Academy.

d) Most ICT professionals in service especially in MDAs have an average professional level of skills and competences in systems administration, especially windows

technologies, networking, user technical support, organizational enterprise systems, basic cyber security and office productivity applications but lack critical 21st century skills, such as cloud computing and virtualization, data science, cyber security, mobile and web technology, research and knowledge management, among others.

e) In terms of ICT skills possessed by non-ICT professionals in the target institutions, the results revealed that majority of staff in these organizations like human resource managers, accountants, doctors, auditors have basic skills in office applications and functional specific systems. Generally, most non-ICT professional staff have low awareness of cyber security and use simple passwords across systems and platforms. They lack skills in data analysis and visualization, social media for productivity, among others.

f) It is estimated that the country produces about 10,000 ICT professionals every year at various levels (certificate, diploma and degree), majority of whom are at certificate level. However, the country still faces skills deficiency in critical areas of ICT, such as cyber security, animations, artificial intelligence, data science, complex systems development, cloud computing and virtualization, computer engineering, among others. The low supply of these critical skills is attributed to a number of factors and key among them include being new fields of specialization and the high costs of investment in training environment. The leading provider of ICT skills and training services is still Makerere University College of Computing and Information Sciences.

g) Generally, there is low investment by organizations in ICT skills development as most institutions do not have budgets for this activity. This action is left to the individual staff efforts in most of the cases.

h) Since the digital skills development is largely left to individual staff efforts, the study sough to establish the existing incentive structures for staff to acquire ICT skills. The results revealed that majority of the institutions offer appraisal points, recognition of staff, sponsorship of the training activities, salary increment, promotion, and some do pay costs for staff to study in that order of importance.

i) In terms of level of willingness to acquire ICT skills, majority of both ICT and non-ICT staff indicated that they very willing to invest in ICT skills development if they are sponsored or given time off, but less willing if they are required to sponsor themselves.

j) The current approach to skilling mainly through face-to-face training sessions (lectures, workshops and seminars) of formally accredited academic programmes or productivity focused short courses.

k) In terms of skills new ICT graduates lack the most, the study revealed the following: cyber security (20%), data science and database management (16.3%), basic ICT skills (16%), complex system design and analysis (13%), among others.

l) With over 600 ICT skills training service providers on NITA-U database in the country, it can be prudently concluded that the country has sufficient suppliers of

basic ICT skills and mid-range skills. However, most ICT skills training service providers do not have capacity to deliver top end competencies ideal for 4IR given the high capital investment needed in terms of labs like robotics, big data labs, artificial intelligence laboratories, cyber security and forensics labs, computer systems engineering labs, among others.

m) Inadequacy of Knowledge Management practices stands out as a challenge across most institutions. This was characterized by lack of knowledge work systems, intelligent techniques, and enterprise-wide knowledge management systems.

2.4   ICT Curriculum Development Practices

This subsection presents findings on how academic and ICT training institutions approached their curriculum development processes. Critical factors considered were level of participation in curriculum development, reasons for insufficient engagement between academia and industry in curriculum development, and ways of engagement in Curriculum Development. Table 13 below presents the key findings.

Table 3: ICT Curriculum Development Practices

Parameter	Regional	Linkage to ICT STA Report
Level of participation in curriculum development	Generally, most organizations do not participate in curriculum development and/or delivery at training institutions. Key inhibiting factors are; lack of collaboration or engagement from universities, lack of time and work overload, lack of facilitation to participate in the events, among others, and lack of enabling policies.	ICT STA Report subsection 3.4 (a & b)
Ways of academia vs ICT training institutions Engagement in Curriculum Development	Where academia and ICT training institutions were involved in the curriculum development process, the engagement medium was mainly workshops and innovation competitions. On the other hand, Graduate tracer studies, public debates, and webinars were least used.	ICT STA Report subsection 3.4 (c)
Ways of academia-industry engagement in Curriculum Development	The commonly used approaches were; stakeholder consultations, industry needs and market demands, institutional resources and interactional benchmarking and trends. Very little of graduate tracer studies was applied. This in part explained the limited availability of the most demanded courses like data science, robotics and artificial intelligence, cloud computing, embedded systems, computer systems engineering and digital forensics etc.	ICT STA Report subsection 3.4 (c)
Type of ICT Programmes Offered	The most common fields of study in ICT in various training institutions were; information technology, computer science, software engineering and business computing and information systems among others. On the other hand, the most common ICT professional certifications offered were; Cisco networking, Microsoft technologies, Oracle, Cyber security and office productivity applications (ICDL).	ICT STA Report subsection 3.4.1

Parameter	Regional	Linkage to ICT STA Report
Key ICT skills providers in Uganda	• Uganda has about 53 universities[3], majority (over 70%) of which did offer courses in ICT at the levels of certificate, diploma, Bachelors and postgraduate. • There are over 80 diploma-awarding institutions of which, majority offer courses at certificate and diploma level in ICT field. • There are over 500 private consulting firms, listed by NITA-U as providers of ICT training services as part of their core services[4]. • There were over 500 Industry professional certifications, over 1000 open-Source online programs and all organizations practiced on-Job coaching and mentoring. • Key ICT skills providers are; Makerere University, Uganda Institute of Information Communication and Technology (UICT), APTECH Computer Training Centre, Nakawa Institute of Business Studies, Makerere Business Institute, Kampala International University, Clarke International University, Kampala University, Uganda Institute of Information and Communications Technology, Cavendish University, Victoria University, Bugema University, St. Lawrence University, Nkumba University, Uganda Christian University, Ndejje University and International University of East Africa.	ICT STA Report subsection 3.4.1 (Table 11)
Models of ICT Academic Programme Delivery	• The majority of the undergraduate ICT programs in most institutions were delivered via face-to face lectures on day and evening study arrangements, while postgraduate programs, which offered more specialization were largely delivered through evening and weekend face to face programs. • The most commonly used ICT delivery models were; In person physical lectures followed by blended learning and student field attachment • The least used delivery models were; open distance learning, guest lectures and study tours • The post Covid19 era characterized rapid integration of eLearning at most universities. A number of universities including Makerere, Nkumba, Uganda Technology and Management University (UTAMU), ISBAT University and Virtual University adopted online learning and offered some ICT programs through blended learning models.	ICT STA Report subsection 3.4.2
Calibre of ICT Staff in ICT Skills	• There was insufficiency of key ICT professionals in the country key among them included Data Scientists, Cyber Security specialists, Enterprise software	ICT STA Report subsection **3.4.3**

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[3] A list of all Registered Institutions https://unche.or.ug/institutions/
[4] List of certified Firms https://itco.nita.go.ug/list-of-certified-companies/

Parameter	Regional	Linkage to ICT STA Report
Training Institutions	developers, Multimedia content specialists and Artificial Intelligence specialists. • The majority of the organizations were understaffed with ICT professional staff compared to their (organizational) level of mandate and results framework. • Uganda had less than 100 PhD holders in computing and information technology, most of who (~65%) were estimated to be stationed at Makerere University College of Computing and Information Sciences. • Most of the academic staff at universities (~70%) possessed at least a master's degree; a clear indicator of high caliber staff. However, fewer academic staff possessed industrial professional certifications such as Cisco, Oracle, Microsoft certifications among others. It is important to note that; inadequacy of professional qualifications among academic staff could be responsible for the weak industrial experience passed on to graduates from these training institutions[5]. • Most ICT professionals in service especially in MDAs had an average professional level of skills and competences in systems administration especially windows technologies, networking, user technical support, organizational enterprise systems, basic cyber security and office productivity applications. They however lacked critical 21st century skills, such as cloud computing and virtualization, data science, cyber security, mobile and web technology, research and knowledge management, among others.	

2.5 Skills gap for ICT professionals, researchers and consultants in target sectors

ICT Skills Demand Patterns

This subsection can be cross-referenced under ICT STA Report section 3.4.5. It focused on Key ICT Skills in demand for both ICT and Non-ICT professionals, ICT professionals in short supply on target MDAs, drivers of ICT skills demand in MDAs and institutions and in-service ICT skills capacity building in target organizations. Others were; CPD incentives and MDA staff willingness to invest in ICT skill development and associated incentives. The study revealed specific findings described under each parameter as summarised in Table 4 below:

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[5] MoICT & NG Skills Training and Needs Assessment Report, 2021

Table 4: ICT Skills Demand Patterns

Issue	Finding
Key ICT Skills in demand for ICT professionals	ICT professionals are expected to possess advanced skills in; office productivity systems like MS Office, internet and email application, e-government systems aligned to their sector and areas of deployment, cyber security and digital forensics, cloud computing and virtualization, wireless computing technologies, institutional specific customer software's and excellent skills in report writing and system incident management.
Key ICT Skills in demand for Non-ICT professionals	Non-ICT professionals are expected to have proficiency in; office applications, web and e-mail applications, functional enterprise systems and associated e-government systems, data management and security, presentation and collaboration, among others.
ICT professionals in short supply on target MDAs	The key ICT professionals in shortly supply include; cyber security experts, data scientists, multi-media content authors especially animators, enterprise systems developers, embedded systems developers, software architects and business process engineers
Drivers for ICT skills demand in MDAs	The key drivers for ICT skills demand in MDA were; government policy on digitalization and e-government, rapidly expanding ICT sector and internet penetration, increased access to ICT devices like smartphones and laptops, global geo-political forces which are promoting nationalism over globalization. These forced countries to develop local capacity to service their citizens.
In-service ICT skills development on MDAs	The majority of the organizations did not provide any specific ICT skills training to both ICT and non-ICT professionals as a means of building their ICT competencies. This is contrary to the principle of Professionalism, which requires all public sector institutions to plan, monitor and evaluate trainings, as espoused in the Uganda Public Service Training Policy (2006) To remain relevant and competitive, institutions must mainstream a number of ICT continuous professional development practices. Key among them include: • Coaching: In-house hands-on support (skilling) to individual staff by senior internal ICT technocrats • Mentoring: Continuous guidance by senior ICT Technocrats • Job shadowing • Job rotation • Online-based self-paced training • Peer to peer support • Workshops facilitated by external experts • Formalized refresher Courses/ Short courses
CPD incentives and MDA staff willingness to invest in ICT skill development	Majority of the organizations offered appraisal points, staff recognition, sponsorship of the training activities, salary increment, study leave and promotion to encourage staff acquire relevant knowledge and skills. Staff in organizations were willing to invest in ICT skills development if they were sponsored or given time off, but less willing if they were required to sponsor themselves.

Issue	Finding
	Access to CPD was limited. Majority of the organizations had not provided any specific ICT skills training to both ICT and non-ICT professionals as a means of building their ICT competences.
Business downtime due to COVID-19	Due to COVID-19 lock downs, business, both in the public and private sectors experienced slow down effect. This drastically affected the uptake of ICTS and e-government services.
Low Per capital income (National)	Uganda's Per capital is still low (below 1 USD). In such a scenario, the citizens may not have enough money to sustainably meet the costs of ICT in the household. Affordability of devices and Services were the main constraint on uptake and use.
Weak integration of E-government Service Platforms	Though a number of e-services had been rolled out including; e-procurement portal, e-passport system, e-receipting, IFMS, IPPS. Some still worked in silos (not integrated).

Comparison of the Respondent Demographics

Table 5 below displays demographic comparisons on gender participation in ICTs and the Level of ICT Digital Skills Proficiency per Sector. Digital proficiency is defined as complementary skills which involve the use of business, commercial, or consumer applications and tools, such as word processing, spreadsheets, business and desktop graphics, email, and collaboration tools.

Table 5: Comparison of the Respondent Demographics

Demographic area	Finding	Linkage to ICT STA Report
Gender participation in ICTs	- ICTS across the board (public and private sectors in Uganda), are male dominated, compared to their female counterparts. The same scenario exists regionally and globally	ICT STA Report subsection 3.4.6 (a)
Level of ICT Digital Skills Proficiency Per Sector	- ICT, education, health and finance sectors possessed high levels of ICT proficiency - The proficiency in these sectors was attributable to the compulsory practice of e-government operational systems such as; EMIS for education, HIMS for health, IPPS and IFMS for finance - Media, agriculture, law and order sectors had the lowest levels of ICT proficiency - This scenario presents an opportunity for UICT to exploit the existing gaps and provide on demand ICT programmes and related human capacity building initiatives.	ICT STA Report subsection 3.4.6 (a)

2.6   Skills Gap Analysis

This sub-section highlights the ICT professional competencies of the different cadres in the target MDAs.

ICT Professional Competencies

According to the European Digital skills competencies framework upon which other frameworks like Skills for Information Age (SFIA) were developed, every formal occupational professional in a knowledge based digital economy, must possess at least 7 critical cross cutting digital skills which include; devices and software operation, information and data literacy, communication collaboration, digital content creation, safety, problem solving, domains and career related competencies.

The results below, are an analysis of the ICT skills possessed by employees at different levels of responsibility in target organizations. These have been contrasted with the 21st century and 4IR skill requirement for employees. Software skill needs for each employee level have also been presented as highlighted in Table 6 below (refer to ICT STA Report subsections 3.5.1 (a, b & g) and 3.5.2).

Table 6: ICT Skills Possessed and Needed by Employees at Different Levels of Responsibility

Category	Level of ICT Competency	Cadre	ICT skills possessed	Skills Needed for 21st Century and (4IR)	Software Skills needed
Organizational Strategic Leadership	Low	Directors of private enterprises, Heads of agencies, etc.	- Basic Digital Literacy Skills - ICT Policy Awareness - E-Government Policies - Strategic IT Management -	Basic skills in; - Data Science - Cyber Security - Content Authoring - Data Analysis - Cloud Computing - Digital Forensics - Internet of Things Stood - Data Analysis & Management - Internet Use and Web Browsing	- Teamwork - Organization - Prioritizing and Planning Work - Professionalism - Self-Drive - Motivation
Senior Management	Medium	Directors, and Commissioners, CEOs/ EDs	- Basic Digital Literacy Skills - Strategic IT Management - ICT Policy Awareness - E-Government Policies	Basic skills in; - Data Science - Cyber Security - Content Authoring - Data Analysis - Cloud Computing - Digital Forensics - Internet of Things Stood - Data Processing	- Teamwork - Reporting - Organization - Prioritizing and Planning Work - Professionalism - Working to Deadline/Time-Management - Problem Solving - Motivation

Category	Level of ICT Competency	Cadre	ICT skills possessed	Skills Needed for 21st Century and (4IR)	Software Skills needed
				- Internet Use and Web Browsing	
Non-ICT professional staff	Medium	Account ants, HR officers, Procure ment officers, auditors, etc.)	- Basic Digital Literacy Skills - Policy Awareness - E-Government Systems - Financial Management Systems - Data Analysis & Management -	Basic skills in; - Data Science - Cyber Security - Content Authoring - Data Analysis - Cloud Computing - Digital Forensics - Internet Of Things Stood - IT Project Management - IT Support	- Teamwork - Communication - Reporting - Organization - Prioritizing and Planning Work - Professionalism - Working to Deadline/Time-Management - Problem Solving - Giving and Receiving Constructive Criticism - Self-Drive - Enthusiasm - Motivation
Head of departments	Medium	Heads of Finance, HR, etc.	- Basic Digital Literacy Skills - Policy Awareness - Strategic IT Management - Cyber Security - System Administratio n - Mobile and Web Technologies -	Basic skills in; - Data Science - Cyber Security - Content Authoring - Data Analysis - Cloud Computing - Digital Forensics - Internet of Things Stood - E-Government - Data Analysis & Management - IT Support	- Teamwork - Communication - Reporting - Creativity - Organization - Prioritizing and Planning Work - Professionalism - Working to Deadline/Time-Management - IT Skills - Problem Solving - Giving and Receiving Constructive Criticism - Self-Drive - Enthusiasm - Motivation
ICT Professional staff	High	ICT Heads	- Basic ICT Skills - E-Government - Data Analysis & Management - System Administratio n	Advanced skills in; - Data Science - Cyber Security - Content Authoring - Data Analysis - Communication - Cloud Computing - Digital Forensics	- Teamwork - Communication - Reporting - Organization - Prioritizing and Planning Work - Professionalism - Working to Deadline/Time-Management - Problem Solving

Category	Level of ICT Competency	Cadre	ICT skills possessed	Skills Needed for 21st Century and (4IR)	Software Skills needed
			- Mobile and Web Technologies - Software Development - IT Support	- Internet of Things Stood - High Policy Awareness - Strategic IT Management -	- Giving and Receiving Constructive Criticism - Self-Drive - Enthusiasm - Motivation
	High	Systems administrators, Networks engineers, Software developers, IT end user support staff	- Basic ICT Skills - Data Analysis & Management - System Administration - Mobile and Web Technologies - Software Development - IT Support	Advanced skills in; - Data Science - Cyber Security - Content Authoring - Data Analysis - Communication - Cloud Computing - Digital Forensics - Internet of Things Stood - High Policy Awareness - Strategic IT Management - E-Government	- Teamwork - Communication - Reporting - Organization - Prioritizing and Planning Work - Professionalism - Working to Deadline/Time-Management - Problem Solving - Giving and Receiving Constructive Criticism - Self-Drive - Enthusiasm - Motivation
	Fresh ICT Employees Medium		Basic ICT Skills in: - Software Development - Cyber Security - Data Science - Database Management - Networking Skills - Data Analysis Skills	Advanced ICT Skills in - Software Development - Cyber Security - Data Science - Database Management - Networking Skills - Data Analysis Skills - Authoring - Data Analysis - Communication - Cloud Computing - Digital Forensics - Internet of Things	- Change Management - Digital Forensics - E-Government Framework Infrastructure - Repair and Maintenance of ICT Equipment - ICDL, MCSA - MCSD, MCSE - CISA, ITIL - CGEIT, PMP - PRINCE2

Uganda's ICT legal and Regulatory Environment

The Government has put in place a number of favorable ICT laws and policies, such as The Press and Journalist Statute, 1995, The Electronic Media Statute, 1996, The Uganda Communications Act, 2013, The Rural Communications Development Policy, 2001, The

National ICT Innovation Support Program (NIISP) and The National ICT Policy 2014[6], among others. However, full implementation and enforcement of these policies and their associated strategies remained a big challenge. There was inadequacy of enablers put in place to support implementation of policies. An entity for example was expected to use internet, yet there was no fiber connectivity to the institution. The cost of data was too expensive to the ordinary person.

In reference to ICT STA Report of June 2022, subsection 3.5,1 (c), the ICT laws and regulations exerted a double-pronged effect in the ICT sector as denoted in Table 7 below.

Table 7: State of Uganda's ICT legal and regulatory environment

Variable	Finding (s)	Manifestation
Regulatory Function	Enabling Effect	• Majority of policies promoted skills growth though adoption of technology, though at a low rate • Institutionalization of the ICT cadre influenced ICT skills development • Policy on promotion of innovation was a good pointer in ICT skills development • Most policies supported the development of relevant programs for skills development
	Constraining Effect	• Inadequate enablers in place to support some policies e.g. an institution is expected to use internet yet there was no equipment and no fibre connectivity. • Some policies limited the participation of private institutions, especially private sector • Inadequacy of requisite ICT infrastructure, which resulted into inequity. Less in rural and public schools compared to urban and private schools and institutions. • Some of the laws were inhibitive and restricted innovation initiatives • Policies did not support private universities with installation of specialized labs. • Some laws and policies lacked clear implementation mechanism • Cost of data was inhibiting implementation of some policies. No regulation • Some policies were not supportive to upcoming startups • There was inadequate facilitation to enforce the regulations (e.g. access).
	Corrupt tendencies among staff in MDAs amidst well documented laws and regulations	Corruption had corroded all sectors of the economy, ICT inclusive

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[6] National ICT Policy,2003

		• The entire economy (government and private sector) were vulnerable to Sophisticated Cyber Security Adversaries. Some had already lost billions of funds • There were challenges in detecting high-tech ICT based corruption
	Inadequacy of Cyber Security Experts in the face of Sophisticating global cyber insecurity	

Table 8 below is a continuation of an analysis of other ICT professional competencies of the different cadres in the target MDAs.

Table 8: Other ICT professional competencies of the different cadres in the target MDAs

Demographic area	Finding	Linkage to ICT STA Report
a. Enabling Infrastructure	The institutions had updated software for office productivity, had reliable internet at the duty station and use of up to date computers, and they had a supportive IT technical team.	ICT STA Report subsection 3.5.1 (d)
b. Proficiency in Key Computer Applications	• The ICT staff in the target organizations had advanced level skills • Majority of the non-ICT staff had intermediate and basic level skills for the different application.	ICT STA Report subsection 3.5.1 (e)
c. Knowledge on Key ICT Concepts	• Majority of the ICT professionals were knowledgeable in the key ICT concepts i.e. ***operation of anti-virus software**, **Information system requirement definition, IT project management, Mobile Applications, and online privacy protection.*** • The Non-ICT professionals had basic proficiency in social media, mobile applications and online privacy protection. • Majority of the Non-ICT professionals were not knowledgeable in; ***business process modeling, cloud computing, contacting Cert, IT project management, IT service performance monitoring, e-Government trends and system integration***.	ICT STA Report subsection 3.5.1 (f)
d. Work Place behaviour	• There were fair ICT behavioral practices by employees in the target organizations for example: the majority of employees in organizations backed up their office data, did not share their passwords with colleagues and did not use the same passwords on multiple systems. • However, over 60% of employees in the target originations did not maintain an online diary, denoting a poor practice.	ICT STA Report subsection 3.5.1 (g)

2.7   Skills and Competency-Based Framework (SCBF)

Skills Framework for Information Age (SFIA) is an ICT Skills Framework that provides a common ICT competence reference model conventionally used across the globe. It is an ICT Skills skill framework that contains recommended essential skills for the Fourth Industrial Revolution (4IR), which are relevant in driving the performance of specialized sectors such as Education, Agriculture, Oil and Gas, Manufacturing, Health, etc. Under the SFIA framework, the study revealed the listing below as available and required skills among the staff categories across the target organizations in their respective sectors.

Table 9: Existing SFIA skills and available skills possessed

Category	Cadre	Required skills	Knowledge
Strategic Leadership	Ministers and Board of Directors	Strategic Planning	Basic digital literacy skills
		Enterprise and Business architecture	Strategic IT management
		Solution architecture	ICT Policy awareness
		Research	Data processing
		Continuity management	Internet use and web browsing
		Personal data protection	E-government policies
		Governance	
		Risk Management	
		Project management	
		Consultancy	
		Methods and tools	
		Business Situation Analysis	
Institutional Senior management	Permanent Secretaries, CEO, Directors, ED) etc.	Strategic planning	Basic digital literacy skills
		Information systems coordination	strategic IT management
		Enterprise and Business architecture	ICT Policy awareness
		Research	Data processing
		Financial management	internet use and web browsing
		Measurement of project, processes and work products	E-government policies
		Sustainability	Other
		Continuity management	
		Risk Management	
		Quality Management	
		Project Management	
		Consultancy	
		Feasibility assessment	
Non-ICT professional staff	Accountants, HR officers, Procurement	Information management	Basic digital literacy skills
		Research	Policy awareness
		Investment appraisal	IT Project management
		Financial management	E-government systems

Category	Cadre	Required skills	Knowledge
	officers, auditors, etc)	Information assurance	Data management
		Risk Management	IT Support
		Audit	
		Consultancy	
		Specialist Advice	
		Feasibility assessment	
Head of Departments		Strategic Planning	Basic digital literacy skills
		Information systems coordination	Policy awareness
		Information management	Strategic IT management
		Innovation	Cyber security
		Emerging technology monitoring	E-government
		Financial management	Data management
		Measurement of project, processes and work products	System Administration
		Personal data protection	Mobile and Web technologies
		Consultancy	IT Support
ICT Professional staff	Systems administrators, Networks engineers, Software developers, IT end user support staff	Information systems coordination	
		Information management	Basic ICT skills
		Innovation	High policy awareness
		Emerging technology monitoring	Strategic IT management
		Information security	Cyber security
		Information assurance	E-government
		Threat intelligence	Data management
		Quality Management and assurance	System Administration
		Consultancy	Mobile and Web technologies
		System testing and auditing	Software development
		IT Project management	IT Support
		Specialist Advice	

Thus, a UICT digital literacy skills competence-based framework to guide the development of programmes is defined in Figure 2 below.
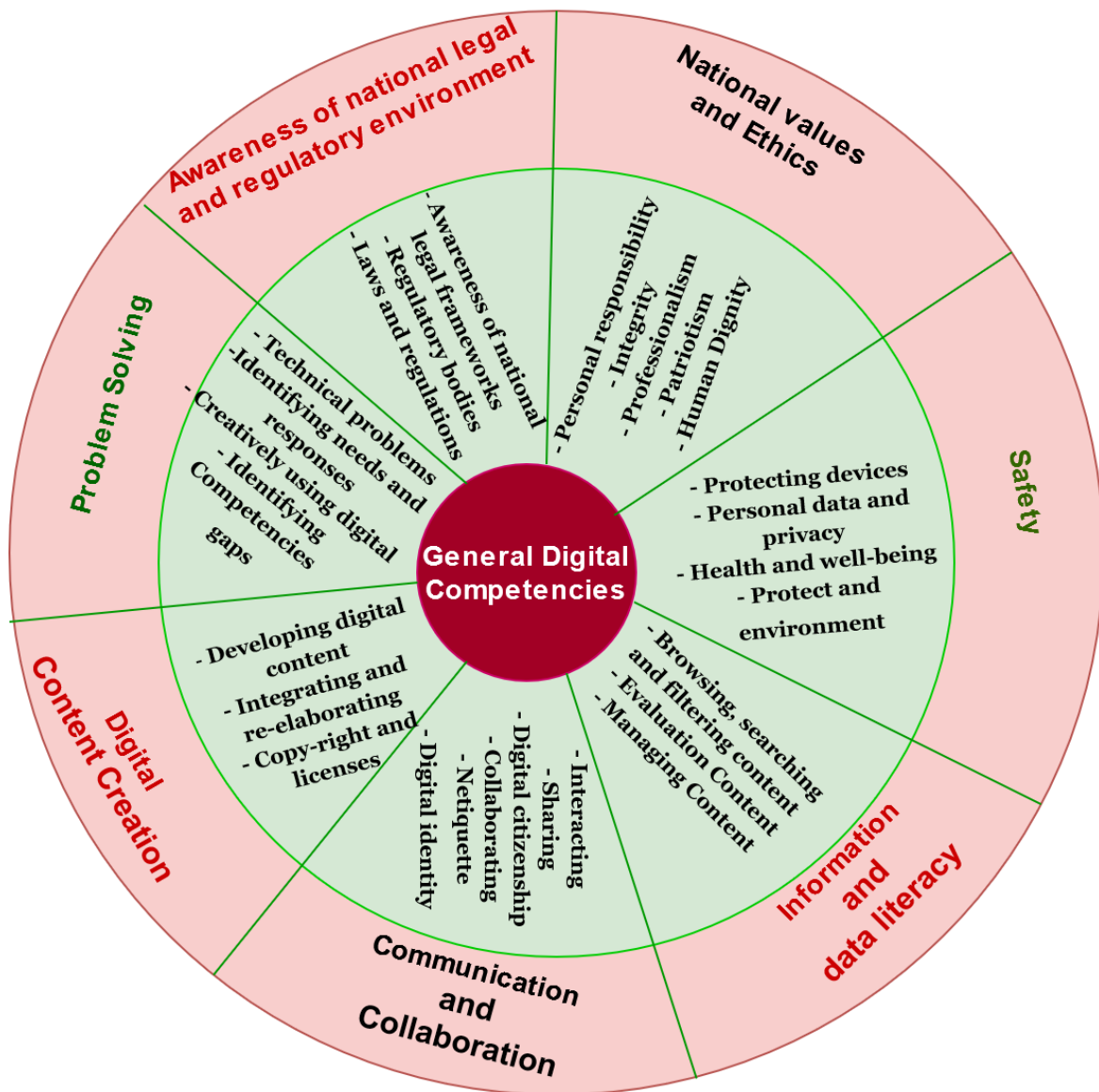
Figure 2: UICT Digital Literacy Skills Competence Framework

2.8 Skills Development Approaches and Models of Access

The table below summarizes the key approaches to ICT skills development being implemented by various organizations in the country.

Table 10: Current approaches used in the target organizations to skills development for their employees

Approach	Finding	Linkage to ICT STA Report
Accessibility to Continuous Professional Development Opportunities	• Majority of organizations had not provided any ICT training to their staff Section in the previous 12 months from the time of the study • Majority of individual employees had not attended/received any ICT related training in the previous 12 months from the time of the study	Subsection 3.5.3 (a)
Willingness to Take a Professional Certificate or Short ICT Course	The majority of employees across the board were willing to take up a professional or short course in ICT at any given time	Subsection 3.5.3 (b)
Types of ICT Training Programmes Offered to ICT professional staff in the previous 12 months by the organisations which supported their staff	Basic ICT skills, social media use and management, cyber security awareness, e-government systems, e-pedagogy, oracle e-business, suite ERP system, use of virtual learning platforms and IT Project management,	Subsection 3.5.3 (c)
Types of ICT Training Programmes Offered to Non-ICT staff in the previous 12 months by the organisations which supported their staff	Basic ICT skills, advanced ICT skills, e-government, computer security, system, office productivity application, and networks and applications prominence	Subsection 3.5.3 (c)
Incentives and Drivers to interest Staff to develop ICT Skills in the Target MDAs	• In order of prominence, the majority of the organizations offered appraisal points, sponsorship to attend training programmes, recognition of staff, paid time off to motivate their staff to take up a course in ICT • Salary increment and promotions were least considered/utilised as incentives	Subsection 3.5.3 (d)
Approaches to skills development in organizations	Most institutions (public and private), employed less expensive (and sometimes budget-neutral) approaches to ICT continuous professional development, such as: i) On job peer mentoring ii) Professional Short courses iii) Productivity short courses iv) Self-paced Online courses v) Online certification programs vi) Computer online based training vii) In service training viii) Refresher Courses	Subsection 3.5.3 (e)

2.9   Key ICT Skills Demand across Sectors

As the Fourth Industrial Revolution (4IR) gathers pace, innovations are becoming faster, more efficient, and more widely accessible than before. Technology is also becoming increasingly connected; in particular, we are seeing a merging of digital, physical and biological realms. New technologies are enabling societal shifts by affecting economics, values, identities and possibilities for future generations (Fourth Industrial Revolution for the Earth, 2017). These and a host of other realities are facing all sectors of the Ugandan economy.
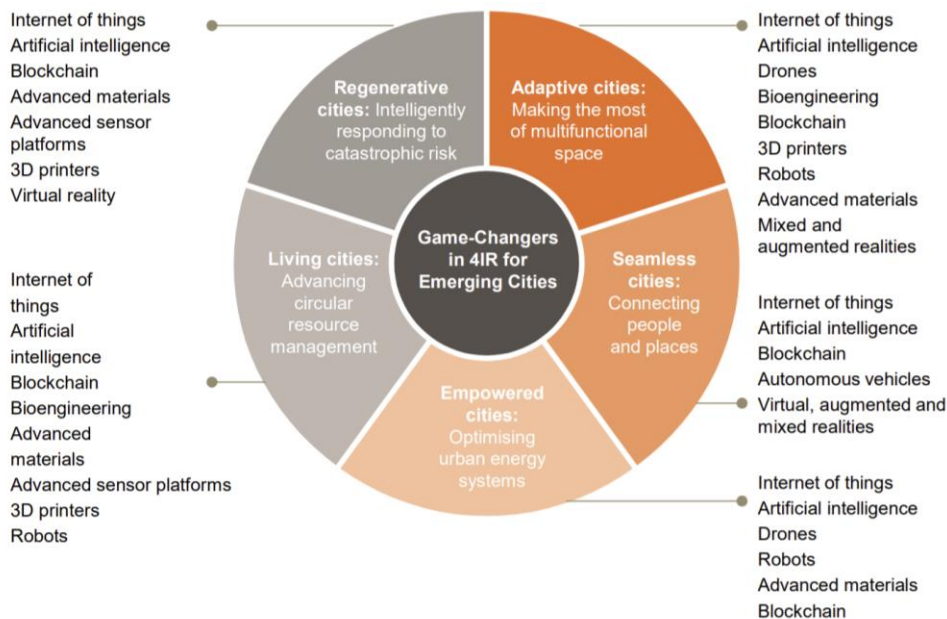
Figure 3: Game-Changes in 4IR (World Economic Forum, 2017)

Among the critical emerging skills for 4IR is the development and utilisation of emerging technologies across sectors to create the desire value in a secure and environment.

To be at pace, the study captured the following as the ICT skills demanded across sectors:

a) At **strategic leadership and senior management** level, the most desired skills include IT strategic leadership, advanced office productivity, cyber security, change management, IT project management, E-government systems, and social media and web technologies, among others.

b) The generally **desired skills for ICT professional graduates** include; artificial intelligence, cyber security, data science, system administration, cloud computing and visualization, complex system development, animations and graphics, mobile and web development, enterprise system development, CCTV and wireless technologies and internet, among others.

c) For **practicing researchers and consultants** in the ICT sector the key desired skills are; data science and data analytics, scientific and policy brief writing, presentation skills and public communication, project management and monitoring, corporate laws and basic financial management, among others.

d) For **software developers** on particular more skills and needed in system architect, requirements engineering and system modelling, enterprise systems development, embedded systems, among others.

e) The most preferred means of ICT skill training was a combination of online and face to face, lasting not more than 5 days for short professional courses.

f) For **BPO industry desires more of certificate** courses as opposed to diploma programmes and should last between 3-6 calendar months.

g) The **digital literacy skills programmes need to be contextualized** to sector specific requirements, technologies and business processes. For example, oil and gas has special digital technologies and platforms which workers must have appropriate level of knowhow and skills.

2.10   UICT human resource capacity Assessment and alumni opinions

Key highlights of UICT HR assessment (refer to Subsections 3.8, 3.8.2 and 3.8.3 of the UICT ICT STA Report of June 2022).

a) UICT is currently understaffed at 39% staffing capacity.

b) Majority of students who enroll at UICT how low academic grades at "O" and "A" level and are mainly motivated by the need to develop skills and acquire new careers opportunities.

c) Generally, students and alumni were satisfied with UICT training programs. They however pointed out the need to improve on curriculum design to be aligned to industry needs, upgrading of the training infrastructure and enhancement of the training approaches in order to optimize learner skills development.

d) Most of the UICT staff had not had or attended any professional training in their areas of specialization to enhance their capacity in the last 3 years.

e) The institute lacks specialist staff in a number of areas such as; cloud computing, robotics, artificial intelligence, data science and big data analytics, research and innovation management and has only 2 PhD holders who are full time in administration.

2.11   Priority ICT Skill Development Areas for Staff in target sectors

Table 11: Priority Skill Areas

Category	ICT Skill Areas	Soft Skills areas
Institutional strategic leaders and managers	- Internet and web technologies - Cyber security and data protection - Report writing and presentation - Office productivity applications and domain specific systems, e.g. teacher management information system, URA portal, etc.	- Critical thinking - Flexibility and adaptability - Emotional intelligence - Complex problem-solving - A collaborative mindset - Creativity - Inquisitiveness management

	• IT strategy and project management	• Accountability • Multicultural diversity management
Non-ICT professionals	• Internet and web technologies • Cyber security and data protection • Advance office productivity applications • Domain specific systems, e.g. teacher management information system, IPPS, oracle, URA portal, etc. • Research methods and data analysis • Report writing and presentation • IT strategy and project management	• Critical thinking • Flexibility and adaptability • Emotional intelligence • Complex problem-solving • A collaborative mindset • Creativity • Inquisitiveness management • Accountability • Cultural diversity management
ICT practicing professionals	• Cloud computing and virtualization • Enterprise software development • Business processing engineering • Software security and software testing • Data science and data analytics • Wireless network technologies and internet of things • Embedded systems design • Cyber security • Systems administration and network security • Mobile and web applications development • IT strategy and project management • Research methods and data analysis • Report writing and presentation • Business process outsourcing	• Critical thinking • Flexibility and adaptability • Emotional intelligence • Complex problem-solving • A collaborative mindset • Creativity • Inquisitiveness management • Accountability • Cultural diversity management
UICT staff	• E-learning and technology mediate learning process • Research methods and data analysis • Report writing and presentation • Internet and web technologies • Cyber security and data protection • Advance office productivity applications • Domain specific technologies in areas of specialization such as cloud computing, security, artificial intelligence, among others.	• Flexibility and adaptability • Emotional intelligence • A collaborative mindset • Creativity • Inquisitiveness management • Accountability • Cultural diversity management

3.0   ICT SKILLS AND TRAINING ACTION PLAN

The section details the key drivers of change, strategic objectives, strategic actions and actors in implementation of ICT Skills and Training Action Plan (STAP).

3.1   Key Drivers of Change

A number of drivers of change influence the rapid growth of the Ugandan ICT sector, key among them is enabling environment by the Government of Uganda, which liberalized the sector, political will, enabling public investment in critical infrastructure and human capital, increasing levels of literacy, steady growing economy at an annual average of 6% according to pre-COVID-19 estimates. Others are; increasing and youthful population (with 77% of Uganda's population the majority being under 25 years of age), emergence of COVID-19 pandemic, which is gradually generating the need for better ICT infrastructure and enhanced public services. Other drivers are linked to the availability of better public services and opportunity, created by advances in technology, to transform public services to be more citizen-focused a classic example of Uganda Revenue Authority Digital platforms. Some of these key drivers of change are stated below:

a) **Government policy and development agenda**: the liberalization of the economy especially the ICT sector and educational sector, and promotion of e-governance has resulted into a rapid expansion in both sectors increase demand for ICT skills and ICT professionals to support the digital economy.   This has also stimulated the advancement of local ICT innovations and entrepreneurship in the country.

b) **Advancement and dynamism in technology (the 4IR):** The advancement in technology has risen demand for new skills and new ICT specialists, hence the increase demand on skills service providers to innovation and deliver new programmes on market.

c) **Improved digital connectivity**: The increasing access to internet and associate services is stimulating the development of digital services and associated demand for ICT skills to consume these services. As observed in the 2020 September report, the internet penetration stood at 49% of the population most of which are the professional workforce. Furthermore, the continued expansion of the National Backbone Infrastructure (NBI) by NITA-U is enabling more people access ICT services hence stimulating demand for ICT skills.

d) **Innovative and transformational leadership**: The rapid turnaround at UICT is in part attributed to a strong innovation and transformative leadership. In this backdrop, UICT is leveraging the experience and social value assets of the current leadership to open new boundaries of opportunities.

e) **The VUCA World**: The emergence of COVID-19 pandemic with associated ripple effects on service delivery has accelerated uptake of ICTs and delivery of digital services across board. This has led to the growing demand for digital skills for both ICT and Non-ICT professionals, and the need to deploy and utilize technology

innatively to deliver and access services in a volatile, uncertain, complex and ambiguous (VUCA) world.

3.2   Strategic Objectives, Strategic Actions and Actors

Table 12: Strategic Objectives, Strategies and Actions

Strategic objectives	Strategic Actions	Actors
To contribute to Human capital development in line with the National Development Agenda	- Contribute to the development of a national ICT skills framework for both ICT and Non-ICT professionals. - Design flexible and practical curricula inclusive of short and long courses targeting in-service and pre-service trainees, career transitionists, etc. - Sustain and upscale the current (ongoing academic programmes) at the Institute. - Develop Quality assurance framework aligned to National aspirations and regulations. - Set up online training programmes for various government agencies in areas where capacity gaps have been identified. - Develop an e-government curriculum aiming at producing champion agents to accelerate digital transformation of all government services. - Develop and mainstream into all curricula align to key international Digital Literacy Skills Framework which incorporates best practices from the different international frameworks such as ICDL and the National Local Content Policy.	NITA-U, UICT Management
To enhance UICT human resource capacity	- Recruit, develop and retain a critical team of professionals in the specific skill areas. - Promote staff industry attachment to enable staff acquire critical industry level knowledge and skills. - FastTrack implementation of targeted training interventions for the various categories of staff as provided in the UICT Organizational Restructuring, Job Evaluation and Job Grading Report (2021, Subsection 11.6). - Train Staff on the current ICT related policies and other emerging policy areas. - Restructure the current staffing structure to cater for the expansion or inclusion of satellite centers resources. - Ensure all UICT staff should complete a minimum of 40 hours of ICT CPD annually. The institute should set up an online tracking portal for this CPD on each individual staff. - Provide staff capacity building in the areas of Consultancy skills, Online Pedagogy, Social media and brand development, team building and professional development	UICT Management and Staff

Strategic objectives	Strategic Actions	Actors
	- Promote and encourage staff to undertake graduate studies especially at PHD level to improve their research capacity. - Encourage staff to acquire industrial certification to improve their knowledge and skills of developing and delivering market demanded training content.	
To develop and deliver demand driven training, research and consultancy services	- Adopt flexible delivery approaches involving online and face to face training. - Franchise some of the readily available international certification programs especially in areas of BPO, data science, cyber security, among others. - Develop tailor made short courses (combining online and face to face training approaches), targeted at the various levels of employees in organization (strategic leadership, senior management, ICT and non-ICT professionals). - Establish and consolidate strategic partnerships with related institutions in the region in order to deliver on demand specialized programs in Telecommunications, Broadcasting, Postal, Radio, Creative Industry, Multimedia, and Communication Officers among others. - Partner with both private and public institutions focused on provision of ICT skills to deliver some of these programs to government employees for example Civil Service College Uganda - FastTrack adoption and implementation of courses contained in the ITU-Digital Transformation Centre (DTU) Training Catalogue (2021). - Conduct regular curriculum review in consultation with stakeholders. - Update UICT curriculum and its delivery with industry demands and incorporate industry experts in program delivery on per cohort basis. - Mainstream the certificate in Knowledge Management program as a short course. This can be achieved in affiliation with the Association for Intelligent Information Management (AIIM) for certification in knowledge management	UICT Management
To enhance the quality and employability of UICT graduates	- Enhance the UICT infrastructure so as to ensure that all academic programs have appropriate ICT infrastructure such as specialized laboratories to deliver the proposed curricula at all times. - Regularly review both the infrastructure and	UICT Management and Staff

Strategic objectives	Strategic Actions	Actors
	curriculum every 3-year ascertain the functionality of the infrastructure to support continued teaching of the approved curriculum, given the backdrop that technology continually improves and the fact that most ICT equipment has a 3-year lifespan. - Improve management and supervision of student field attachment to ensure meaningful engagement of students in their respective fields of study. - Engage both public and private sector stakeholders in Curriculum development, professional development, Internship Placement, Research and Innovation - Implement a student-centered problem-based learning approach to promote skills development. Relatedly, promote practical or competence based academic progression assessment as opposed to theoretical examinations.	UICT Management and Staff
To position UICT as a regional center of excellence in digital skilling and associated professions	- Equip existing specialized labs with relevant equipment's to enhance skills development and transfer to learners. - Regularly conduct research about best practices in other countries and develop appropriate interventions - Establish satellite training centers in strategic locations in the country to cater for emerging market segments - Develop and implement a market expansion strategy using most cost-effective platforms for example use of social media, MDA structures and government online systems to advertise programmes, stakeholder outreach information sessions and free introductory trainings, etc. - Lobby decision makers on MDAs and LGs to make UICT their partner in ICT capacity building in their sectors/organizations - Expand partnership horizon to include willing scholarship partners such as ENABEL and UNESCO who have focus on digital literacy skills development - Establish institute scholarship fund targeting best performing applicants and special interest groups like Refugees. - Lobby UCC for increased sponsorship budget especially targeting priority sectors of government employees. - UICT should increase participation in industry-based events to increase brand visibility	UICT management

4.0 ICT STAP IMPLEMENTATION

The proposed actions in this ICT STAP are designed to be implemented in a five-year period. The prioritization of actions is largely informed by the urgency of the ecosystem demands, the turnaround strategy of UICT, the Third National Development Plan, the NRM Manifesto, UICT Strategic Plan and Ministry of ICT &NG Strategic Outlook. The actions and categorized into Short term (implementable within 1 year), Medium term (implementable between 1-5 years) and Long term (implementable 5 years out). The colour codes to highlight the high-level implementation are blue for **short term,** green for **mid-term** and gold for **long term** strategic actions.

Table 13 below showcases in detail activities and timelines for implementation of ICT STAP over a period of 5 years.

Table 13: Activities and timelines for ICT STAP implementation over a period of 5 years

Strategic objectives	Strategic Actions	S	M	L	Actors
To contribute to Human capital development in line with the National Development Agenda	Contribute to the development of a national ICT skills framework for both ICT and Non-ICT professionals	X			NITA-U, UICT Management
	Design flexible and practical curricula inclusive of short and long courses targeting in-service and pre-service trainees, career transitionists, etc.		X		UICT Management
	Sustain and upscale the current (ongoing academic programmes) in the Institute.			X	UICT Management
	Develop Quality assurance framework aligned to National aspirations and regulations		X		UICT Management
	Set up online training programmes for various government agencies in areas where capacity gaps have been identified		X		NITA-U, UICT Management
	Develop an e-government curriculum aiming at accelerating uptake of government digital services.	X			NITA-U, UICT Management
	Develop and mainstream into all curricula align to key international Digital Literacy Skills Framework which incorporates best practices from the different international frameworks such as ICDL and the National Local Context Policy		X		UICT Management
To enhance UICT human resource capacity	Recruit, develop and retain a critical team of professionals in the specific skill areas.		X		UICT Management and Staff
	Promote staff industry attachment to enable staff acquire critical industry level knowledge and skills		X		UICT Management and Staff
	Fasttrack implementation of targeted training interventions for the various categories of staff as provided in the UICT Organizational Restructuring, Job Evaluation and Job Grading Report (2021, Sec.11.6).	X	X	X	UICT Management and Staff
	Train Staff on the current policies such as ICT policies among others	X	X	X	UICT Management and Staff

Strategic objectives	Strategic Actions	S	M	L	Actors
	Restructure the current staffing structure to cater for the expansion or inclusion of satellite centers resources		X		UICT Management and Staff
	All UICT staff should complete a minimum of 40 hours of ICT CPD annually. The institute should set up an online tracking portal for this CPD on each individual staff.		X		UICT Management and Staff
	Raise the staffing gap from the current 31% to at least 85% over 2-3 years	X	X	X	UICT Management and Staff
	Provide staff capacity building in the areas of Consultancy skills, Online Pedagogy, Social media and brand development, team building and professional development	X	X	X	UICT Management and Staff
	Promote and encourage staff to undertake graduate studies especially at PHD level to improve their research capacity	X	X	X	UICT Management and Staff
	Encourage staff to acquire industrial certification to improve their knowledge and skills of developing and delivering market demanded training content		X	X	UICT Management and Staff
To develop and deliver demand driven training, research and consultancy services	Adopt flexible delivery approaches involving online and face to face training.		X		UICT Management
	Franchise some of the readily available international certification programs especially in areas of BPO, data science, cyber security, among others.		X	X	UICT Management
	Develop tailor made short courses (combining online and face to face training approaches), targeted at the various levels of employees in organization (strategic leadership, senior management, ICT and non-ICT professionals).	X	X	X	UICT Management
	Establish and consolidate strategic partnerships with related institutions in the region in order to deliver on demand specialized programs in Telecommunications, Broadcasting, Postal, Radio, Creative Industry, Multimedia, and Communication Officers among others.		X		UICT Management

Strategic objectives	Strategic Actions	S	M	L	Actors
	Partner with both private and public institutions focused on provision of ICT skills to deliver some of these programs to government employees for example Civil Service College Uganda		X		UICT Management
	FastTrack adoption and implementation of courses contained in the ITU-Digital Transformation Centre (DTU) Training Catalogue (2021).		X		UICT Management
	Conduct regular curriculum review in consultation with stakeholders.		X		UICT Management
	Alignment UICT curriculum and its delivery with industry demands.	X			UICT Management
	Incorporate industry experts in program delivery on per cohort basis.	X			UICT Management
	Mainstream the certificate in Knowledge Management program as a short course. This can be achieved in affiliation with the Association for Intelligent Information Management (AIIM) for certification in knowledge management	X			UICT Management
To enhance the quality and employability of UICT graduates	Enhance the UICT infrastructure so as to ensure that all academic programs have appropriate ICT infrastructure such as specialized laboratories to deliver the proposed curricula at all times.	X	X	X	UICT Management and Staff
	Regularly review both the infrastructure and curriculum every 3-year ascertain the functionality of the infrastructure to support continued teaching of the approved curriculum, given the backdrop that technology continually improves and the fact that most ICT equipment has a 3-year lifespan		X		UICT Management and Staff
	Improve management and supervision of student field attachment to ensure meaningful engagement of students in their respective fields of study.	X	X	X	UICT Management and Staff
	Engage both public and private sector stakeholders in Curriculum development, professional development, Internship Placement, Research and Innovation	X	X	X	UICT Management and Staff
	Implement a student-centered problem-based learning approach to promote skills development. Relatedly, promote practical or competence based academic progression assessment as opposed to		X		UICT Management and Staff

Strategic objectives	Strategic Actions	S	M	L	Actors
	theoretical examinations.				
To position UICT as a regional center of excellence in digital skilling and associated professions	Equip existing specialized labs with relevant equipment's to enhance skills development and transfer to learners.	X	X	X	UICT management
	Regularly conduct research about best practices in other countries and develop appropriate interventions	X	X	X	UICT management
	Establish satellite training centers in strategic locations in the country to cater for emerging market segments.			X	UICT management
	Develop and implement a market expansion strategy using most cost-effective platforms for example use of social media, MDA structures and government online systems to advertise programs, stakeholder outreach information sessions and free introductory trainings, etc.		X		UICT management
	Lobby decision makers on MDAs and LGs to make UICT their partner in ICT capacity building in their sectors/organizations		X		UICT management
	Expand partnership horizon to include willing scholarship partners such as ENABEL and UNESCO who have focus on digital literacy skills development		X		UICT management
	Establish institute scholarship fund targeting best performing applicants and special interest groups like Refugees.		X		UICT management
	Lobby UCC for increased sponsorship budget especially targeting priority sectors of government employees.		X		UICT management
	UICT should increase participation in industry-based events to increase brand visibility		X		UICT management

4.1   Financing Plan for ICT STAP

The UICT STAP implementation and rollout will follow a short to medium term funding plan running for a period of 5 years.

The financing plan is focused on enabling UICT mobilize critical resources largely through internally generated revenue, strategic intervention support from UCC, support from development partners and government appropriation through the consolidated funding vote under the ministry of ICT and National Guidance.

To achieve this, the UICT management as the overall coordinator of this action plan will need to continually engage key stakeholders in both public and private sectors to identify opportunities of growth and resource mobilization. Accordingly; this finance plan provides a clear map of cost drivers across the implementation period and highlights the overall resource commitments projected to achieve the actions defined in the STAP. The total estimated budget for the 5 years is projected at around UGX 7.61billion as shown in Table 8.

Table 14: Funding Plan for ICT STAP Implementation

Strategic Objective	Year 1	Year 2 - 3	Year 3 - 4	Year 4 - 5	Total Cost (Bn UGX)
To contribute to Human capital development in line with the National Development Agenda	0.17	0.65	0.17	0.12	**1.11**
To enhance UICT human resource capacity	0.465	0.88	0.82	0.7	**2.865**
To develop and deliver demand driven training, research and consultancy services	0.225	0.215	0.22	0.215	**0.875**
To enhance the quality and employability of UICT graduates	0.335	0.335	0.335	0.335	**1.34**
To position UICT as a regional centre of excellence in digital skilling and associated professions	0.43	0.33	0.33	0.33	**1.42**
TOTAL	**1.625**	**2.41**	**1.875**	**1.7**	**7.61**

4.2   Key Budget Drivers

Table 15 below specifies the detailed allocation of funds per strategic action. The costs contained herein are estimates and should be validated through the procurement processes with the sector. The key cost drivers of the funds have also been indicated.

Table 15: Detailed Allocation of Funds per Strategic Action over the next 5 Years

Strategic Objectives	Strategic Actions	Cost centers	Year 1	Year 2-3	Year 3-4	Year 4-5	Cost (Bn UGX)
To contribute to the development of human capital relevant for the National Employment Agenda	Contribute to the development of a national ICT skills framework for both ICT and Non-ICT professionals	Consultancy services, stakeholder engagements	0	0.3	0	0	0.3
	Design flexible and practical curricula inclusive of short and long courses targeting in-service and pre-service trainees, career transitionists etc.	Consultancy services, stakeholder engagements	0.05	0.05	0.05	0	0.15
	Sustain and upscale the current (ongoing academic programs) in the Institute.	curriculum review and development	0.02	0.02	0.02	0.02	0.08
	Develop Quality assurance framework aligned to National aspirations and regulations	Consultancy services, stakeholder engagements	0	0.1	0	0	0.1
	Set up online training programs for various government agencies in areas where capacity gaps have been identified	Consultancy services for program development, content authoring and online program facilitation	0	0.16	0.08	0.08	0.32
	Develop an e-government curriculum aiming at accelerating update of government digital services.	Consultancy services, stakeholder engagements	0.08	0	0	0	0.08
	Develop and mainstream into all curricula align to key international Digital Literacy Skills Framework which incorporates best practices from the	stakeholder consultations, curriculum review and update costs	0.02	0.02	0.02	0.02	0.08

Strategic Objectives	Strategic Actions	Cost centers	Year 1	Year 2-3	Year 3-4	Year 4-5	Cost (Bn UGX)
	different international frameworks such as ICDL and the National Local Context Policy						
	Recruit, develop and retain a critical team of professionals in the specific skill areas.	salaries, wages, and staff development costs	0.1	0.3	0.3	0.3	1
	Promote staff industry attachment to enable staff acquire critical industry level knowledge and skills	staff facilitation	0.015	0.02	0.02	0.02	0.075
	FastTrack implementation of targeted training interventions for the various categories of staff as provided in the UICT Organizational Restructuring, Job Evaluation and Job Grading Report (2021, Sec.11.6).	staff capacity building, consultancy services,	0.04	0.05	0.04	0.05	0.18
	Train Staff on the current policies such as ICT policies among others	training workshops and facilitation fees	0	0.01	0	0	0.01
To enhance UICT human resource capacity	Restructure the current staffing structure to cater for the expansion or inclusion of satellite centers resources	new staff positions and allowances	0.05	0.05	0.05	0.05	0.2
	All UICT staff should complete a minimum of 40 hours of ICT CPD annually. The institute should set up an online tracking portal for this CPD on each individual staff.	Staff CPD PERFORMANCE TRACKING PORTAL DEVELOPMENT	0	0.04	0	0	0.04
	Raise the staffing gap from the current 31% to at least 85% over 2-3 years	Salaries and wages for staff positions filled	0.1	0.2	0.2	0.2	0.7
	Provide staff capacity building in the areas of Consultancy skills, Online Pedagogy, social media and brand development, team building and professional development	consultancy services, workshops and staff facilitation	0.04	0.04	0.04	0.04	0.16

Strategic Objectives	Strategic Actions	Cost centers	Year 1	Year 2-3	Year 3-4	Year 4-5	Cost (Bn UGX)
	Promote and encourage staff to undertake graduate studies especially at PHD level to improve their research capacity	Tuition sponsorship, research fees and other associated study costs	0.1	0.15	0.15	0	0.4
	Encourage staff to acquire industrial certification to improve their knowledge and skills of developing and delivering market demanded training content	training fees & certification fees	0.02	0.02	0.02	0.04	0.1
To develop and deliver demand driven training, research and consultancy services	Adopt flexible delivery approaches involving online and face to face training.	staff refresher seminars	0.01	0.015	0.01	0.015	0.05
	Franchise some of the readily available international certification programs especially in areas of BPO, data science, cyber security, among others.	Franchising and accreditation fees	0.03	0.03	0.03	0.03	0.12
	Develop tailor made short courses (combining online and face to face training approaches), targeted at the various levels of employees in organization (strategic leadership, senior management, ICT and non-ICT professionals).	Curriculum development costs	0.03	0.03	0.03	0.03	0.12
	Establish and consolidate strategic partnerships with related institutions in the region in order to deliver on demand specialized programs in Telecommunications, Broadcasting, Postal, Radio, Creative Industry, Multimedia, and Communication Officers among others.	Collaboration in initiation costs like travel, MoU processing, accreditation fees among others	0.06	0.06	0.06	0.06	0.24

Strategic Objectives	Strategic Actions	Cost centers	Year 1	Year 2-3	Year 3-4	Year 4-5	Cost (Bn UGX)
	Partner with both private and public institutions focused on provision of ICT skills to deliver some of these programs to government employees for example Civil Service College Uganda	Collaboration in initiation costs like travel, MoU processing, accreditation fees among others	0.03	0.03	0.03	0.03	0.12
	FastTrack adoption and implementation of courses contained in the ITU-Digital Transformation Centre (DTU) Training Catalogue (2021).	Course adaption costs	0.02	0.01	0.02	0.01	0.06
	Conduct regular curriculum review in consultation with stakeholders. Alignment UICT curriculum and its delivery with industry demands.	Curriculum review workshops, travel costs for stakeholder consultations	0.015	0.015	0.015	0.015	0.06
	Incorporate industry experts in program delivery on per cohort basis.	expert facilitation fees and wages (guest lectures, seminars	0.02	0.02	0.02	0.02	0.08
	Mainstream the certificate in Knowledge Management program as a short course. This can be achieved in affiliation with the Association for Intelligent Information Management (AIIM) for certification in knowledge management	Affiliation fees and program marketing	0.01	0.005	0.005	0.005	0.025
To enhance the quality and employability of UICT graduates	Enhance the UICT infrastructure so as to ensure that all academic programs have appropriate ICT infrastructure such as specialized laboratories to deliver the proposed curricula at all times.	Procurement of equipment and refurbishing of existing equipment, furniture & fittings etc.	0.25	0.25	0.25	0.25	1
	Regularly review both the infrastructure and curriculum every 3-years to ascertain the functionality of	Staff incentives for extra work load	0.01	0.01	0.01	0.01	0.04

Strategic Objectives	Strategic Actions	Cost centers	Year 1	Year 2-3	Year 3-4	Year 4-5	Cost (Bn UGX)
	the infrastructure to support continued teaching of the approved curriculum, given the backdrop that technology continually improves and the fact that most ICT equipment has a 3-year lifespan						
	Improve management and supervision of student field attachment to ensure meaningful engagement of students in their respective fields of study.	Staff facilitation for field supervision, orientation workshops and seminars,	0.04	0.04	0.04	0.04	0.16
	Engage both public and private sector stakeholders in Curriculum development, professional development, Internship Placement, Research and Innovation	local travel costs, workshops and seminars	0.02	0.02	0.02	0.02	0.08
	Implement a student-centered problem-based learning approach to promote skills development. Relatedly, promote practical or competence based academic progression assessment as opposed to theoretical examinations.	Pedagogical orientation seminars for staff	0.015	0.015	0.015	0.015	0.06
To position UICT as a regional center of excellence in digital skilling and associated professions	Equip existing specialized labs with relevant equipment's to enhance skills development and transfer to learners.	Procurement of equipment	0.05	0.05	0.05	0.05	0.2
	Regularly conduct research about best practices in other countries and develop appropriate interventions	Consultancy services and staff facilitation costs	0.05	0.05	0.05	0.05	0.2
	Establish satellite training centers in strategic locations in the country to cater for emerging market segments.	Infrastructure and operating costs	0.1	0.1	0.1	0.1	0.4

Strategic Objectives	Strategic Actions	Cost centers	Year 1	Year 2-3	Year 3-4	Year 4-5	Cost (Bn UGX)
	Develop and implement a market expansion strategy using most cost-effective platforms for example use of social media, MDA structures and government online systems to advertise programs, stakeholder outreach information sessions and free introductory trainings, etc.	New staff positions and allowances	0.15	0.05	0.05	0.05	0.3
	Lobby decision makers on MDAs and LGs to make UICT their partner in ICT capacity building in their sectors/organizations	Local travel costs and stakeholder meeting incidentals	0.01	0.01	0.01	0.01	0.04
	Expand partnership horizon to include willing scholarship partners such as Enabel and UNESCO who have focus on digital literacy skills development	Local travel costs and stakeholder meeting incidentals	0.01	0.01	0.01	0.01	0.04
	Establish institute scholarship fund targeting best performing applicants and special interest groups like Refugees.	Tuition and functional fees	0.04	0.04	0.04	0.04	0.16
	Lobby UCC for increased sponsorship budget especially targeting priority sectors of government employees.		0	0	0	0	0
	UICT should increase participation in industry-based events to increase brand visibility	Even participation costs such as registration and participate facilitation	0.02	0.02	0.02	0.02	0.08
			1.625	**2.41**	**1.875**	**1.7**	**7.61**

5.0   ICT STAP MONITORING, EVALUATION AND LEARNING FRAMEWORK

This Monitoring, Evaluation and Learning Framework has been developed as a tool to guide the actors on measuring, attainment of key milestones in the life cycle of STAP implementation. In this context, **Monitoring** refers to observation and recording of key activity outputs in line with the implementation plan while **Evaluation** refers to a systematic and objective process of assessing activity outcomes against targeted outputs. The **learning** component of the ME&L framework refers to the principle of integrating the knowledge for monitoring and evaluation into decision processes by various actors/implementers of the STAP.

Figure 3 below illustrates the ICT STAP Monitoring, Evaluation and Learning Framework:

Figure 4: ICT STAP Results Chain

5.1   Key Principles guiding the ME&L Framework

The following key principles reinforce this ICT STAP's ME&L framework:

a) **Ownership:** For acceptability and sustainable implementation of the STAP, ownership of the strategic actions by relevant stakeholders is critical thus to cultivate that ownership, this STAP has been developed through a knowledge co-creating stakeholder consultative process with active participation of UICT.

b) **Engagement of stakeholders:** All the stages of development of this STAP have been conducted through stakeholder engagements to ensure vision sharing, clarity of actions and stakeholder buy-in and commitment to its implementation. A cross section of stakeholders consulted include regulators, ICT suppliers, and employers of UICT products. Key among them include UCC, Ministry of ICT & NG, Ministry of Education and Sports, National Council for Higher Education (NCHE), Parliament of Uganda, Office of the Auditor General, OPM, Equal Opportunities Commission, Ministry of Finance, Planning and Economic Development (MoFPED), Staff and students of UICT.

c) **Result orientation:** The ME&L framework has been designed based on a results-based management approach, focusing on measuring achievement of results to capitalize on learning process all-the-while ensuring accountability for results and overall effectiveness.

d) **Practical and cost-effective processes:** Cost effectiveness will be evidenced by a practical robust curricula and successful outcomes. The STAP's activities have been planned to be efficiently and effectively resourced all the while ensuring the set objectives are being met.

e) **Ensuring evidence-based practices:** For this ICT STAP, effort has been made to undertake regional bench marking of institutions with similar mandate to that pf UICT. A number of related literature and core stakeholders with high level interest in UICT were consulted. The standardized and consistent data collection and reporting; as well as information and knowledge capture and synthesis, will go a long way in providing validated evidence of achievement to UICT.

5.2   STAP ME&L Framework

This ICT STAP ME&L Framework has been informed by the ICT Skills and Training Needs Assessment among the targeted sectors. The table below highlights the key elements of the ME&L.

Table 16: ME&L Framework for ICT STAP

Strategic objectives	Strategic Actions	Process	Output	Means of verification	Outcome	Assumptions
To contribute to the development of human capital relevant for the National Employment Agenda	Contribute to the development of a national ICT skills framework for both ICT and Non-ICT professionals	- Participating in consultative meets and stakeholder validation and approval of the framework	National ICT skills framework in place and adopted into UICT	-Participation reports in consultative meetings -Copies of the National ICT skills framework	Harmonized digital literacy skills development eco-system in the country	-Availability of funds -Cooperation from the key stakeholders
	Design flexible and practical curricula inclusive of short and long courses targeting in-service and pre-service trainees, career transitionists, etc.	- Drafting curricula - Pilot testing - Approval of the curricula by UICT Board - -Accreditation by UNCHE	New curricula in place and implemented	Copies of the new curricula	A flexible and practical curriculum aligned with National ICT skills framework	-Availability of funds -Cooperation from UNCHE
	Sustain and upscale the current (ongoing academic programmes) in the Institute.	-Upscale the academic programmes in accordance with the new curricula	ongoing academic programmes up scaled	- Copies of active programmes	Increased number of graduates of UICT	Availability of technical personnel
	Develop Quality assurance framework (QAF) aligned to National aspirations and regulations	-Stakeholder consultation -Data collection -Drafting (aligning) the QAF -Approval of the QAF	-QAF in place and implemented	-Copies of the UICT quality assurance framework	Improved quality of graduates for UICT	-Availability of funds - Availability of technical personnel

Strategic objectives	Strategic Actions	Process	Output	Means of verification	Outcome	Assumptions
	Set up online training programmes for various government agencies in areas where capacity gaps have been identified	-Assessment of capacity gaps among agencies -Designing the online programmes -Pilot testing the programmes -Approval of the programmes	Online training programmes in place and implemented	Copies of online programmes developed	Increased availability of digital skills within government	-Availability of funds - Availability of technical personnel
	Develop an e-government curriculum aiming at accelerating update of government digital services.	- Drafting e-government curriculum - Pilot testing - Approval of the curricula by UICT Board - -Accreditation by UNCHE	New curriculum in place and implemented	-Copies of E-government curriculum	Increased uptake of E-government services by citizens	-Availability of funds -Cooperation from UNCHE
	Develop and mainstream into all curricula aligned to key international Digital Literacy Skills Framework which incorporates best practices from the different international frameworks such as ICDL and the National Local Context Policy	- Drafting e-government curriculum - Pilot testing - Approval of the curricula by UICT Board -Accreditation by UNCHE	Curricula aligned to key international Digital Literacy Skills Framework and the National Local Context Policy developed	Copies of curricula aligned to key international Digital Literacy Skills Framework	Enhanced quality of graduates from UICT	-Availability of funds - Availability of technical personnel -Cooperation from UNCHE
To enhance UICT human resource capacity	Recruit, develop and retain a critical team of professionals in the specific skill areas.	-Assess wage bill and capacity building fund provision	Number of staff recruited, trained and retained	-Recruitment plans and reports -Payroll	Enhanced attainment of the institutional	-Availability of wage bill -Availability of staff

Strategic objectives	Strategic Actions	Process	Output	Means of verification	Outcome	Assumptions
		-recruit and fill the vacant posts -Undertake Training Needs Assessment (TNA) -Identify staff to train and develop -Train staff on bonding agreement		-Staff lists	results framework	capacity building fund -Cooperation by staff
	Promote staff industry attachment to enable staff acquire critical industry level knowledge and skills	-Undertake assessment of industry -Do staff/industry mapping -Develop attachment schedule to ensure minimum disruption of teaching -Undertake staff attachment	Number of staff attached and benefiting from industry attachment	- Staff industry attachment lists and reports	Improved teaching and training and overall knowledge and skills transfer to learners	-Availability of funds -Cooperation by staff -Cooperation by industry
	Fast-track implementation of targeted training interventions for the various categories of staff as provided in the UICT Organizational Restructuring, Job Evaluation and Job Grading Report (2021, Sec.11.6).	-Assess Capacity building fund provision -Undertake Training Needs Assessment (TNA) -Identify staff to train -Train staff on bonding agreement	-Number of targeted trainings conducted -Number of staff benefiting from the targeted trainings	-Training reports -Lists of staff beneficiaries -- Bonding agreements	Enhanced staff performance	-Availability of staff capacity building fund -Cooperation by staff
	Train Staff on the current policies such as ICT policies among others	-Assess Capacity building fund provision	-Number of policies cascaded to staff	Training reports	Improved awareness and implementation	-Availability of staff

Strategic objectives	Strategic Actions	Process	Output	Means of verification	Outcome	Assumptions
		-Undertake Training Needs Assessment (TNA) -Identify staff to train -Train staff on bonding agreement	-Number of beneficiary staff	-Staff lists of beneficiaries -Bonding agreements	of institutional policies	capacity building fund -Cooperation by staff
	Restructure the current staffing structure to cater for the expansion or inclusion of satellite centers resources	- Undertake assessment of the UICT strategic plans. - Do job Evaluation and job Grading Report Design a new structure. - Communicate the reorganization. - Seek approval - Launch your company restructure and adjust as necessary -	New staff structure in place and operational	Copy of the new structure	Improved institutional performance on targeted result areas	-Availability of funds -Availability of staff support services
	All UICT staff should complete a minimum of 40 hours of ICT CPD annually. The institute should set up an online tracking portal for this CPD on each individual staff.	-Identify CPD fund -Undertake a staff CPD assessment -Categories staff according to their CPD needs	Staff CPD schedules in place and implemented -Online tracking portal in place and functional	- Staff CPDs reports -Bonding agreements	Improved staff performance	-Availability of staff CPD fund -Cooperation by staff -

Strategic objectives	Strategic Actions	Process	Output	Means of verification	Outcome	Assumptions
		-Develop and implement staff CPD schedules -Design and implement an online tracking portal -Band beneficiary staff				
	Raise the staffing gap from the current 31% to at least 85% over 2-3 years	-Assess wage bill provision -recruit and fill essential vacant posts	-Essential vacant posts filled up to 85% by 3rd year	-Recruitment plans and reports -Payroll -Staff lists	Improved attainment of institutional results per the established strategic plan	-Availability of wage bill
	Provide staff capacity building in the areas of Consultancy skills, Online Pedagogy, Social media and brand development, team building and professional development	-Identify staff capacity building (CB) fund -Undertake a TNA -Develop and implement staff CB training schedules -Bond beneficiary staff	-Staff CB trainings conducted in the areas of Consultancy skills, Online Pedagogy, Social media and brand development, team building and professional development	-CB Training reports -Staff lists of beneficiary staff - Bonding agreements	Expanded institutional revenue base	-Availability of staff CB fund -Cooperation by staff -
	Promote and encourage staff to undertake graduate studies especially at PHD level to improve their research capacity	-Assess Training fund provision -Undertake Training Needs Assessment (TNA) -Identify staff to train -Train staff on bonding agreement	Staff enrolled or completed graduate trainings at Masters and/or PhD level	-Training reports -Lists of staff beneficiaries - Bonding agreements	Improved research output and institutional academic ranking	-Availability of staff training fund -Cooperation by staff

Strategic objectives	Strategic Actions	Process	Output	Means of verification	Outcome	Assumptions
	Encourage staff to acquire industrial certification to improve their knowledge and skills of developing and delivering market demanded training content	-Undertake staff industrial certification mapping -Develop staff industrial certification training schedules -Train staff on bonding agreement	At least 85% of staff holding industrial certification by end of the 5 years	-Training reports - Bonding agreements	Improved teaching practices and overall learner outcomes	-Availability of training funds -Cooperation by staff -Cooperation by industry
To develop and deliver demand driven training, research and consultancy services	Adopt flexible delivery approaches involving online and face to face training.	-Design blended earning approaches -Sensitize staff and ensure adoption of the approaches	Blended learning delivery approaches involving online and face to face in place and implemented	- Copies of the approaches -Staff sensitization reports -Implementation reports	Increased enrollment	-Availability of funds - Availability of technical personnel
	Franchise some of the readily available international certification programs especially in areas of BPO, data science, cyber security, among others.	-Undertake a franchise assessment exercise to guide franchising -Identify entities to partner with -Ensure QA framework for uniform curriculum implementation -Implement the franchise	Available international certification programs franchised	Training reports according to franchised certifications -Lists of training partners	Increased program portfolio at UICT, enhanced program visibility and expanded revenue base	-Availability of funds - Availability of technical personnel -Cooperation from franchise partners

Strategic objectives	Strategic Actions	Process	Output	Means of verification	Outcome	Assumptions
	Develop tailor made short courses (combining online and face to face training approaches), targeted at the various levels of employees in organization (strategic leadership, senior management, ICT and non-ICT professionals).	-Design curricula for tailor made courses -Sensitize the teaching staff and franchise partners and ensure adoption -Implement the tailor made short courses -M&E of the tailor made short courses	Tailor made short courses developed and implemented	Copies of curricula for tailor made courses developed	-Increased revenue -Increased coverage	-Availability of funds - Availability of technical personnel -Cooperation from franchise partners
	Establish and consolidate strategic partnerships with related institutions in the region in order to deliver on demand specialized programs in Telecommunications, Broadcasting, Postal, Radio, Creative Industry, Multimedia, and Communication Officers among others.	-Undertake partnership mapping of strategic and beneficial partners -Sign MOUs with relevant/selected partners -Partner in line with MOUs	Beneficial partnerships established and consolidated	-lists of partners -Copies of MOUs signed	Improved revenue, student enrollment and brand visibility	-Cooperation from partners
	Partner with both private and public institutions focused on provision of ICT skills to deliver some of these programs to government employees for example Civil Service College Uganda	-Undertake partnership mapping of strategic private and public institutions -Sign MOUs -Partner in line with MOUs	Beneficial partnerships established and consolidated	-lists of partners -Copies of MOUs signed	Increased uptake of digital skills training by MDAs -Increased vicinity	-Cooperation from partners

Strategic objectives	Strategic Actions	Process	Output	Means of verification	Outcome	Assumptions
	FastTrack adoption and implementation of courses contained in the ITU-Digital Transformation Centre (DTU) Training Catalogue (2021).	-Develop and popularize fast-tracking schedule/check list for courses contained in the ITU-Digital Transformation Centre (DTU) Training Catalogue (2021). -Train assessors -Undertake the fast tracking	Courses contained in the ITU-Digital Transformation Centre (DTU) Training Catalogue (2021) fast-tracked.	Fast-tracking reports by course	Improved institutional visibility and expanded revenue base	-Availability of funds - Availability and cooperation by the technical personnel
	Conduct regular curriculum review in consultation with stakeholders. Alignment UICT curriculum and its delivery with industry demands	-Undertake curriculum implementation assessment -Do stakeholder consultation -Identify implementation gaps. Success stories and lessons learnt -Seek approval for new changes -Review the curriculum -Sensitize teaching staff	Reviewed curriculum in place and implemented	Copy of the reviewed curriculum	A responsive curricula to market demands	-Availability of funds -Cooperation by stakeholders

Strategic objectives	Strategic Actions	Process	Output	Means of verification	Outcome	Assumptions
	Incorporate industry experts in program delivery on per cohort basis.	-Undertake industry assessment and mapping vis-à-vis the curriculum -Do experience sharing between staff and industry experts -Deploy industry experts	Industry experts incorporated and deployed in program delivery	-Training reports -Lists of industry experts	Enhanced learner experience and outcomes	-Cooperation by industry experts -Availability of funds
	Mainstream the certificate in Knowledge Management program as a short course. This can be achieved in affiliation with the Association for Intelligent Information Management (AIIM) for certification in knowledge management	-Sign specific affiliation MOU for Knowledge Management program as a short course with AIIM -Agree on and contextualize the curriculum - Build capacity of the teaching staff to deliver the curriculum -Do M&E and capture success stories and lessons learnt -Reengineer the course	Knowledge Management program as a short course mainstreamed into the UICT curriculum	-Copy of the MOU with AIIM- -Copy of contextualized curriculum on -Copy Operational certificates in knowledge management	-Increased revenue -Enhanced institutional performance -Enhanced visibility of UICT	-Cooperation by AIIM -Availability of funds
	Regularly review both the infrastructure and curriculum every 3-year ascertain the functionality	-Undertake regular assessment of curriculum implementation and	-Reviewed curriculum in place and implemented	-Infrastructure review reports	Updated infrastructure inventory	-Availability of funds

Strategic objectives	Strategic Actions	Process	Output	Means of verification	Outcome	Assumptions
	of the infrastructure to support continued teaching of the approved curriculum, given the backdrop that technology continually improves and the fact that most ICT equipment has a 3-year lifespan	infrastructure functionalist -Do stakeholder consultation -Identify curriculum implementation gaps. Success stories and lessons learnt - Identify infrastructure functionality status -Seek approval for new changes and purchases -Review the curriculum -Procure infrastructure -Sensitize teaching staff	-Functional infrastructure in place	-Copies of the reviewed curricular	-Robust and responsive curriculum	-Availability of technical personnel
	Improve management and supervision of student field attachment to ensure meaningful engagement of students in their respective fields of study.	-Design supervision tools -Map out and engage potential partner industries -Develop student field attachment schedules -Deploy students -Supervise students -Produce supervision reports	-Students attached to their respective specialty industry and effectively supervised	-Students filed attachment reports -Supervision reports	Improved internship experience for UICT students and overall enhanced knowledge and skills transfer	-Availability of funds -Adequate supervisors

Strategic objectives	Strategic Actions	Process	Output	Means of verification	Outcome	Assumptions
	Engage both public and private sector stakeholders in Curriculum development, professional development, Internship Placement, Research and Innovation	-Map out public and private sector stakeholders of influence -Undertake stakeholder engagement in aspects of Curriculum development, professional development, Internship Placement, Research and Innovation	-Stakeholders engaged and actively involved in aspects of in aspects of Curriculum development, professional development, Internship Placement, Research and Innovation	Stakeholder engagement reports	Responsive curricula to market demands	-Cooperation by the stakeholders -Availability of funds
	Implement a student-centered problem-based learning approach to promote skills development. Relatedly, promote practical or competence based academic progression assessment as opposed to theoretical examinations.	-Design a contextualized student-centered problem-based learning approach -Design academic progression assessment tools -Sensitize students and staff -Implement the approach -Undertake M&E and capture success stories and lessons learnt	-A student-centered problem-based learning approach operationalized -Academic progression assessment operationalized	- Copies of the student-centered problem-based learning approach - Implementation reports -Learning assessment reports	Improved quality of UICT graduates in terms possession of employability skills	-Availability of funds -Adequate professional staff

Strategic objectives	Strategic Actions	Process	Output	Means of verification	Outcome	Assumptions
		-Reengineer the approach				
To position UICT as a regional center of excellence in digital skilling and associated professions	Equip existing specialized labs with relevant equipment's to enhance skills development and transfer to learners.	-Undertake an assessment of equipment status of specialized labs -Identify essential equipment -Procure equipment -Operationalize the specialized labs	Specialized labs equipped and operational	-Assessment reports		
	Regularly conduct research about best practices in other countries and develop appropriate interventions	-Map out countries with best practices -Undertake regular case studies -Utilize lessons learnt to improve UICT programming	-Case studies regularly undertaken and best practices utilized	Case study reports	Improvement of UICT business processes through knowledge assimilation	-Availability of funds -Cooperation from countries studied
	Establish satellite-training centers in strategic locations in the country to cater for emerging market segments.	-Map (zone) out potential satellite-training centers in strategic locations -Put in place staff and infrastructure -Advertise (popularize) the satellite-training centers -Ensure QA framework for uniform curriculum implementation	Satellite-training centers established and operational	-Establishment reports -Training reports -	Improved UICT brand visibility and overall revenue collection	-Availability of funds -Cooperation from locations of satellite centers

Strategic objectives	Strategic Actions	Process	Output	Means of verification	Outcome	Assumptions
		-Operationalize the centers				
	Develop and implement a market expansion strategy using most cost-effective platforms for example use of social media, MDA structures and government online systems to advertise programs, stakeholder outreach information sessions and free introductory trainings, etc.	-Procure consultancy services to develop market expansion strategy -Implement the market expansion strategy	Market expansion strategy developed and operationalized	-Copy of the marketing strategy -Implementation reports	Increased UICT brand visibility, student enrolment and increased revenue	-Availability of funds -Competent consultant
	Lobby decision makers on MDAs and LGs to make UICT their partner in ICT capacity building in their sectors/organizations	-Map out decision makers (MDAs & LGs -Develop lobby and partnership strategy -Implement the strategy	Partnership established with MDAs and LGs	Lobby and partnership reports	Increased awareness of UICT among critical stakeholders	-Cooperation by potential MDAs and LGs
	Expand partnership horizon to include willing scholarship partners such as ENABEL and UNESCO who have focus on digital literacy skills development	-Undertake partnership mapping of potential scholarship partners -Sign MOUs -Partner in line with MOUs	Beneficial partnerships established and consolidated	-lists of scholarship partners -Copies of MOUs signed	Improved UICT brand visibility and enhanced student enrollment on UICT programs	-Cooperation from partners
	Establish institute scholarship fund targeting best performing applicants and special interest groups like Refugees.	-Develop resource mobilization strategy -Mobilize resources -Operationalize the scholarship fund	Scholarship fund established and operationalized	-Copy of the resource mobilization strategy - Scholarship fund reports	Increased enrolment of less privileged students on UICT programs	-Availability of funds

Strategic objectives	Strategic Actions	Process	Output	Means of verification	Outcome	Assumptions
	Lobby UCC for increased sponsorship budget especially targeting priority sectors of government employees.	-Develop lobby and partnership strategy -Implement the strategy with UCC	Budget increase targeting priority sectors of government employees lobbied for	Evidence of increased budgets	Increased reach of UICT among critical sectors of society	Cooperation of UCC
	UICT should increase participation in industry-based events to increase brand visibility	-Map out industry-based events -Engage organizing entities -Sign MOUs -Participate in line with MOUs	UICT participation in industry-based events enhanced	Participation reports	Increased UICT brand visibility	-Availability of funds -Cooperation of organizing entities

5.3   Reporting and Dissemination Plan for ME&L Products

Table 17 below provides direction and guidance for reporting all the implementation progress towards the realization of the objectives of this ICT STAP.

Table 17: Reporting and Dissemination Plan for ME&L Products

Monitoring and Evaluation Products	Target Recipients/ Audience	Period	Responsible Centre	Strategies for dissemination
Objective 1: To contribute to the development of human capital relevant for the National Employment Agenda				
Status reports on UICT participation in the development of a national ICT skills framework for both ICT and Non-ICT professionals	UICT Governing Council,	Within 3 months from implementation commencement	NITA-U, UICT Management	Results presentations and sharing of final report with stakeholders
Status report on a flexible and practical curriculum inclusive of short and long courses targeting in-service and pre-service trainees, career transitionists, etc.	UICT Governing Council, UCC, NCDC, NITA-U & MoICT & NG & all MDAs & LGs	End of quarter 2 of year I	UICT Management	Sharing of copies of the final curricula with stakeholders
Reports on students' enrolment in various academic programmes	UICT Governing Council	Quarterly	UICT Management	Sharing of quarterly institute performance reports
Reports on approved UICT quality assurance framework	All MDAs, UICT Governing Council, NCHE, UCC, NCDC, NITA-U & MoICT & NG	End of 2nd year of implementation	UICT Management	Sharing of copies of the final quality assurance framework
Reports on online programmes developed for various government agencies	MoICT & NG, NCHE, NCDC, MDAs & LGs, Development and Implementing Partners	End of 2nd year of implementation, then every semester	NITA-U, UICT Management	Dissemination of brochures, calendars & websites through various public media
Report on approved and functional e-government curriculum	UICT Governing Council, MoICT & NG, NCHE, NCDC, MDAs & LGs, Development and	End of 1st year of implementation, then annually	NITA-U, UICT Management	Sharing of copies of the e-government curriculum

Monitoring and Evaluation Products	Target Recipients/ Audience	Period	Responsible Centre	Strategies for dissemination
	Implementing Partners			
Report on enhanced Curricula, aligned to key international Digital Literacy Skills Framework	UICT Governing Council, MoICT & NG, NITA-U, NCHE, NCDC, MDAs & LGs, Development and Implementing Partners	End of 1st year of implementation	UICT Management	Sharing of copies of the enhanced Curricula
Objective 2: To enhance UICT human resource capacity				
Reports on enhanced institutional performance as a result of professional staff recruited, developed and retained	UICT Governing Council	Quarterly	UICT Management	Sharing of quarterly performance management reports
Reports on targeted training interventions for the various categories of UICT staff as per the Organizational Restructuring, Job Evaluation and Job Grading Report (2021, Sec.11.6).	UICT Governing Council	Within 6 months of implementation, then quarterly	UICT Management	Sharing of quarterly performance management reports
Reports on staff capacity building interventions to enhance awareness and implementation of institutional policies	UICT Governing Council	Within 6 months of implementation, then quarterly	UICT Management	Sharing of quarterly performance management reports
Report on approved and functional structure of UICT to cater for the expansion or inclusion of satellite centre resources	MoICT & NG, NITA-U, NCHE, NCDC, MOPs, MoFPED	By end of 2nd year of implementation, then annually	UICT Governing & Management	Sharing of copies of the new UICT staff structure
Status report on UICT staff CPDs	UICT Governing Council	By end of 2nd year of implementation, then annually	UICT Management	Sharing of quarterly performance

Monitoring and Evaluation Products	Target Recipients/ Audience	Period	Responsible Centre	Strategies for dissemination
				management reports
Report on UICT staffing capacity (31% to at least 85%)	UICT Governing Council, MoICT & NG, NITA-U, NCHE, NCDC, MOPs, MoFPED	By end of 1st year of implementation, then annually	UICT Management	Sharing of annual recruitment plans and reports
Reports on UICT staff capacity in Consultancy skills, Online Pedagogy, Social media and brand development, team building and professional development	UICT Governing Council	Quarterly	UICT Management	Sharing of quarterly capacity building reports
Reports on UICT staff graduate training completion rates and research capacity	MoICT & NG, UCC, UICT Governing Council, NITA-U, NCHE & MOPs	Quarterly/Annually	UICT Management	Sharing of quarterly & annual graduate training progress and completion reports
Reports on UICT staff industrial certification training to improve their knowledge and skills of developing and delivering market demanded training content	UICT Governing Council & private sector	Quarterly/Annually	UICT Management	Sharing of quarterly & annual staff industrial certification training reports
Objective 3: To develop and deliver demand driven training, research and consultancy services				
Draft reports on programmes converted to blended learning mode	MoICT & NG, UCC, NCDC, UICT Governing Council, NITA-U, NCHE	By end of 2nd year of implementation	UICT Management	Workshop presentations and report sharing on 1st programmes converted to blended learning mode
Approved reports on 1st lot of programmes converted to blended learning mode	MoICT & NG, UCC, NCDC, UICT Governing Council, NITA-U, NCHE	By end of 2nd year of implementation, then annually	UICT Management	Dissemination of brochures, calendars & websites through various public media
Approved report on the international certification	UICT Governing Council, MoICT & NG, NCHE, NCDC,	By end of 2nd year of	UICT Management	Dissemination of brochures, calendars &

Monitoring and Evaluation Products	Target Recipients/ Audience	Period	Responsible Centre	Strategies for dissemination
programmes established on franchise and partnerships	MDAs & LGs, Development and Implementing Partners	implementation, then annually		websites through various public media
Report on approved tailor-made short courses (combining online and face to face training approaches), targeted at the various levels of employees in organization (strategic leadership, senior management, ICT and non-ICT professionals).	UICT Governing Council, MoICT & NG, NCHE, NCDC, MDAs & LGs, Development and Implementing Partners	Within 6 months of implementation, then quarterly	UICT Management	Dissemination of brochures, calendars & websites through various public media
Report on strategic regional partnerships specific to developing and delivering demand specialized programmes in Telecommunications, Broadcasting, Postal, Radio, Creative Industry, Multimedia, and Communication Officers among others.	MoICT & NG, NITA-U and UICT Governing Council	By end of 2nd year of implementation, then quarterly and annually	UICT Management	Sharing of quarterly & annual reports on strategic **regional** partnerships
Reports on local partnerships built (private and public institutions) for enhanced uptake of UICT digital skills training by MDAs	MoICT & NG, NITA-U and UICT Governing Council and private sector players	By end of 2nd year of implementation, then quarterly and annually	UICT Management	Sharing of quarterly & annual reports on local partnerships built
Reports on adoption and implementation of key courses contained in the	UICT Governing Council, MoICT & NG, NCHE, NCDC, MDAs & LGs, Development	By end of 2nd year of implementation, then annually	UICT Management	Sharing of quarterly & annual reports

Monitoring and Evaluation Products	Target Recipients/ Audience	Period	Responsible Centre	Strategies for dissemination
ITU-Digital Transformation Centre (DTU) Training Catalogue (2021).	and Implementing Partners			
Comprehensive midterm review of all curricula	UICT Governing Council, MoICT & NG, NCHE, NCDC, MDAs & LGs, Development and Implementing Partners	By end of 3rd year of implementation	UICT Management	Workshop presentations Sharing of review reports
Reports on participation of industry experts in programme delivery	UICT Governing Council	Quarterly	UICT Management	Sharing of quarterly reports
Report on development and mainstreaming of Operational certificate in knowledge management (course)	UICT Governing Council, MoICT & NG, NCHE, NCDC, MDAs & LGs, Development and Implementing Partners	By end of 1st year of implementation	UICT Management	Dissemination of brochures, calendars & websites through various public media
Objective 4: To enhance the quality and employability of UICT graduates				
Reports on equipment procured and labs refurbished and their operationally	UICT Governing Council	Quarterly	UICT Management	Sharing of review reports
Review reports on functionality of infrastructure and curriculum implementation	UICT Governing Council	By end of 3rd year of implementation	UICT Management	Sharing of review reports
Reports on participation of stakeholders in curriculum & professional development, Internship Placement, Research and Innovation	UICT Governing Council	Quarterly	UICT Management	Workshop presentation and sharing of internship reports

Monitoring and Evaluation Products	Target Recipients/ Audience	Period	Responsible Centre	Strategies for dissemination
Objective 5: To position UICT as a regional center of excellence in digital skilling and associated professions				
Status reports on functionality of specialized labs	UICT Governing Council	By end of 1st year of implementation, then quarterly	UICT Management	Sharing of reports
Reports on case-based researches conducted and best practices adopted and implemented	UICT Governing Council	Annually	UICT Management	Sharing of reports
Reports on satellite training centres established and functional	UICT Management, MoICT & NG, NCHE, NCDC, MDAs & LGs, Development and Implementing Partners	By end of 4th year of implementation	UICT Management	Dissemination of brochures, calendars & websites through various public media
Status report on UICT Marketing strategy and its implementation	UICT Governing Council, MoICT & NG, NITA-U	By end of 2nd year of implementation and then quarterly	UICT Management	Sharing of reports
Reports on stakeholder engagements on UICT programme awareness and partnership creation	UICT Governing Council, MoICT & NG, NCHE, NCDC, MDAs & LGs, Development and Implementing Partners	By end of 2nd year of implementation, then quarterly	UICT Management	Dissemination of brochures, calendars & websites through various public media
Status reports on scholarship partnerships established and functional	UICT Governing Council, MoICT & NG, NCHE, NCDC, MDAs & LGs, Development and Implementing Partners	By end of 2nd year of implementation, then quarterly	UICT Management	Dissemination of brochures, calendars & websites through various public media
Status reports on establishment and operationalization of institute scholarship fund targeting best performing applicants and	UICT Governing Council, MoICT & NG, NCHE, NCDC, MDAs & LGs, Development and Implementing Partners	By end of 3rd year of implementation, then quarterly	UICT Management	Sharing of reports, through websites and other public media

Monitoring and Evaluation Products	Target Recipients/ Audience	Period	Responsible Centre	Strategies for dissemination
special interest groups				
Status reports on UCC Financial support to priority sector employees at UICT	UICT Governing Council, MoICT & NG, NCHE, NCDC, MDAs & LGs,	By end of 3rd year of implementation, then quarterly	UICT Management	Sharing of reports
Reports on UICT participation in industry-based events	UICT Governing Council, MoICT & NG, NITA-U	Quarterly	UICT Management	Sharing of reports, through websites

ANNEXES

Annex: Recommendations from ICT STNA

No	Issues to address	Action/Recommendation	Actor	Priority
1	Insufficiency of some specific ICT professionals to drive the country's economy in both private and public sectors (artificial intelligence, cyber security, data science, Software Developers, cloud computing and virtualization, complex system development, animations and graphics, mobile and web development, CCTV, Network Administrators and wireless technologies and internet, IT strategy management and Internet of things)	• Recruit, develop and retain a critical team of professionals in the specific skills areas. • Design flexible and practical curricula inclusive of short and long courses targeting in-service and pre-service trainees, career transitionists, etc. • Adopt flexible delivery approaches involving online and face to face training. • Sustain and upscale the current (ongoing academic programs) in the Institute. • Franchise some of the readily available international certification programs especially in areas of BPO, data science, cyber security, among others.	UICT Governing Council & Management	High
2	ICT training quality assurance	• UICT should ensure that all academic programs have appropriate ICT infrastructure such as specialized laboratories to deliver the proposed curricula. • Keep the specialized training labs updated with relevant infrastructure and software to the current market demand • Both the infrastructure and curriculum should be subjected to a 5-year mandatory curriculum review to ascertain the functionality of the infrastructure to support continued	UICT Management	Medium

No	Issues to address	Action/Recommendation	Actor	Priority
		teaching of the approved curriculum, given the backdrop that technology continually improves and the fact that most ICT equipment has a 3-year lifespan. • Develop Quality assurance framework • Train Staff on the current policies such as ICT policies among others • Should Stock the current existing specialised labs with most needed equipment's to enhance IT training requirements the market world.		
3	Massive need for continuous professional development by employees in both public and private sector and preference for a combination of online and face-to-face training not exceeding 5 days	• UICT to develop tailor made short courses (combining online and face to face training approaches), targeted at the various levels of employees in organization (strategic leadership, senior management, ICT and non-ICT professionals). • UICT should partner with both private and public institutions focused on provision of ICT skills to deliver some of these programs to government employees. • FastTrack adoption and implementation of courses contained in the ITU-Digital Transformation Centre (DTU) Training Catalogue (2021).	UICT Governing Council and Management	High
4	Local governments and other institutions operating outside Kampala have the same level needs as far as ICT skills and training needs are concerned.	• Establish satellite training centers in strategic locations in the country to cater for the massive need on the ground. • Restructure the staffing structure to cater for the expansion (satellite centers). • Engage in strong marketing strategy, such as district to district approach, Institution to Institutions arrangement, etc. • Lobbying through Ministries for IT capacity building in their sectors.	UICT Governing Council and Management	Medium
5	Existing willingness to acquire ICT skills by majority of both ICT and non-ICT professionals if sponsored	• Lobby for increased government sponsorship budget especially targeting priority sectors of government employees.	UICT Governing Council	High

No	Issues to address	Action/Recommendation	Actor	Priority
		• Expand partnership horizon to include willing scholarship partners such as Enabel and UNESCO who have focus on digital literacy skills development. • Establish institute scholarship fund targeting best performing applicants and special interest groups like Refugees. • UICT, should set up online training programs for various government agencies in areas where capacity gaps have been identified.		
6	Support governing digitalization processes	• Develop an e-government curriculum aiming as accelerating update of government digital services.	UICT Management	High
7	Demand driven curriculum development (Low participation of stakeholder in curriculum development or delivery)	• Conduct regular curriculum review in consultation with stakeholders. • Alignment UICT curriculum development and delivery with industry demands. • Incorporate industry experts in program delivery on per cohort basis.	UICT Governing Council and Management	High
8	Mandatory ICT Continuous Professional Development (CPD) for UICT staff	• All employees of UICT should complete a minimum of 40 hours of ICT CPD annually. The institute should set up an online tracking portal for this CPD on each individual staff. •	UICT Human Resource Manager	Lower
		• Provide Training in the areas of Consultancy skills, Online Pedagogy, Social media and brand development, team building and professional development • UICT needs to promote and encourage staff to undertake graduate studies especially at PHD level to improve their research and consultancy capacity	UICT Human Resource Manager	Medium
9	Digital Literacy Skills Framework	• UICT should develop and mainstream into all curricula align to key international Digital Literacy Skills Framework which incorporates best practices from the different international frameworks such as ICDL and the National Local Context Policy.	UICT Management	Medium

No	Issues to address	Action/Recommendation	Actor	Priority
10	Alignment of academic programs with Digital Transformation Program and National Development Agenda	• As a good practice, all ICT academic programs developed by UICT should be aligned to NDP III and Digital Uganda Vision.	UICT Management	High
11	Continuous benchmarking and learning	• UICT management and staff should regularly conduct research about best practices in other countries and develop appropriate interventions. • UICT should continuously establish bilateral collaborations with renown institutions with the same mandate as UICT within the African Region and globally.	UICT Management	Medium
12	Providing enabling infrastructure	• UICT management should provide the basic enabling ICT facilities especially, computers and 24-hour fast internet, to all her employees and students.	UICT Management	High
13	UICT- Industry partnership for enhanced academic performance	• UICT should involve (incorporate) professionals from industry to provide regular socialized training sessions to students on selected areas of interest. • Establish and consolidate strategic partnerships with related institutions in the region in order to deliver on demand specialized programs in Telecommunications, Broadcasting, Postal, Radio, Creative Industry, Multimedia, and Communication Officers among others.	UICT Management	High
		• UICT should encourage their staff to acquire industrial certification to improve their knowledge and skills of developing and delivering market demanded training content. • UICT management should involve industry in Curriculum development, professional development, Internship Placement, Research and Innovation	UICT Management	Low
14	Promoting student-centered problem-based learning	• UICT should focus student centered problem-based learning to promote skills development. Also, they should promote	UICT Management	High

No	Issues to address	Action/Recommendation	Actor	Priority
		practical or competence based academic progression assessment as opposed to theoretical examinations.		
15	Production of work ready graduates	• UICT should improve management and supervision of student field attachment to ensure meaningful engagement of students in their respective fields of study.	UICT Management	High
16	Under staffing at UICT and Inadequacy of Knowledge Management practices across MDAs	• On a gradual (annual basis), raise the staffing gap from the current 31% to at least 85% over 2-3 years • Recruit, develop and retain a critical team of professionals in the specific skills areas. • FastTrack implementation of targeted training interventions for the various categories of staff as provided in the UICT Organizational Restructuring, Job Evaluation and Job Grading Report (2021, Sec.11.6). • UICT should mainstream into its curriculum a certificate in Knowledge Management as a short course. This can be achieved in affiliation with the Association for Intelligent Information Management (AIIM) for certification in knowledge management • Ensure regular capacity building of staff through the use of cross cutting management courses to benefit all categories; Administrative, academic and part-time staff.	UICT Management	High