

The Global E-Schools and Communities Initiative (GESCI) African Leadership in Information Communication Technology and Knowledge Society Development (ALICT) – Leadership Africain pour les Technologie Information Communication et le développement de la société du savoir (LATIC)

Impact Evaluation

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Acronyms

ALICT	African Leadership in Information and Communication Technology and Knowledge Society Development
AUC	African Union Commission
COP	Community of Practice
DCU	Dublin City University
GESCI	Global E-Schools and Communities Initiative
ICT	Information and Communication Technology
ITU	International Telecommunication Union
KS	Knowledge Society
LATIC	<i>Leadership Africain pour les Technologie Information Communication et le développement de la société du savoir</i> (African Leadership in Information and Communication Technology and Knowledge Society Development)
MBO	Manage by Objectives
MDG	Millennium Development Goals
MFA	Ministry of Foreign Affairs
PDP	Personal Development Plan
SD	Standard Deviation
SDG	Sustainable Development Goals
STI	Science, Technology and Innovation

Introduction

The African Leadership in ICT and Knowledge Society Development (ALICT) programme was launched in 2010, as a flagship African Union Commission (AUC) Leadership Capacity Building Initiative. The programme was developed and implemented by the Global E-Schools and Communities Initiative (GESCI), with funding from the Ministry for Foreign Affairs (MFA) of Finland. ALICT has built the capacities of 487 mid and senior government leaders in 16 Anglophone and Francophone African countries, as well as officials from the AUC between 2012 to 2015.¹ The Francophone version of the ALICT Programme is referred to as *the Leadership Africain pour les TIC et le développement de la société du savoir (LATIC)*. This initiative is therefore, hereinafter referred to as the ALICT-LATIC Programme in this report.

The ALICT-LATIC Programme aimed to build capacity and raise awareness of African leaders and policy makers on the role and contribution of Information, Communication Technologies (ICT), Education, and Science, Technology and Innovation (STI) towards the development of Knowledge Societies in Africa. It was focused on bridging public sector leadership needs across key pillars of education, STI and ICT. Courses comprised of contextualized, modular content, founded upon country research and reflecting the identified needs of country governments.

It has been argued that for a knowledge society (KS) to be realized, supported and/or further developed, education and innovation should be viewed as inter-related drivers for socio-economic development.² In this context, ICT is enabler for both innovation and education, and an important foundation from which education and innovation can accelerate socio-economic development in a knowledge society. ICT as an enabler for education, and innovation to drive development comprises several, inter-related dimensions (e.g. policy development and ICT infrastructure).

Following the situational and country needs analysis exercise conducted in 2011 in five countries (i.e. South Africa, Mauritius, Kenya, Tanzania and Zambia), the GESCI ALICT-LATIC implementation team identified four core domains of leadership development and capacity building needs that are required of public sector leaders in the 21st century.³ These domains, listed below, represent four critical 'levers' for leadership change and development:

- Lever 1: Develop leadership capacity for understanding the innovation ecosystem and its linkages between research, innovation, science and technology, education and ICT for development.
- Lever 2: Develop the ability of organizational leaders to transform policy frameworks into operational models.
- Lever 3: Support individual leaders and facilitate capacity building for decision-making that does not necessarily reflect the past ways of doing things.
- Lever 4: Give leaders room to innovate through support and facilitation to ensure increased productivity and creativity.

The ALICT-LATIC Programme's main concern was to build absorptive capacity of current and potential future African leaders to acquire, assimilate, transform and exploit the benefits of knowledge. It aimed to foster dynamic organizational capability through knowledge sharing, collaboration and exposure to technology. Through participation in the ALICT-LATIC course, it is hoped that future African leaders

¹ See Appendix A for the distribution of programme participants by country

² Neil Butcher and Associates. (2011). *ICT, education, development, and the knowledge society*. Nairobi, GESCI. Retrieved from:

http://gesci.org/fileadmin/user_upload/4 ICT in STEM Education Files/ICT Education Development and the Knowledge Society 1_1 .pdf

³ GESCI (2011). *Summary and conclusions of the ALICT country needs analysis*, Nairobi, GESCI

will demonstrate knowledge, skills and attitudes that promote their role as change agents. These were expected to translate into positive benefits for their respective countries in pursuit of inclusive knowledge societies.

The ALICT-LATIC Programme pioneered 'futures thinking' methodologies on a large-scale in the public sector, with thorough and in-depth human resource audits and feedback for personal development. It included leadership development tools and processes for addressing specific leadership development needs for the development and advancement of knowledge societies in African countries and the region. The programme integrated a blended learning approach featuring online course delivery and face-to-face workshops.

The programme was implemented as follows:

- A GESCI direct implementation covering three cohorts (436 participants) across 13 Anglophone countries and officials from the AUC working in partnership with AUC and the Dublin City University (DCU) as the accrediting institution (phase 1: 2012 - 2014)
- A GESCI direct implementation covering one cohort (51 participants) in three Francophone countries in partnership with AUC and DCU as the accrediting institution (phase 2: 2015)
- The start of a partnership model implementation working with national and regional partners and accrediting institutions (phase 2: 2015 - 2016).

Initially the focus was on Southern and East African countries. Subsequently, Western and Northern African countries were incorporated into the ALICT-LATIC Programme, expanding its scope and reach.

Purpose and Objectives

The purpose of the ALICT-LATIC impact study was to carry out a detailed assessment and analysis of the programme benefits. In particular, the focus was to recognize the far and wide reaching results of the ALICT-LATIC Programme, noting its effects and influence on key stakeholders, particularly alumni. Additionally, the micro, meso, and macro policy coherence for knowledge society development level impacts that have been - or may in future be attributable to the ALICT-LATIC interventions were of interest. These include results at the level of individuals (ALICT-LATIC participants, peers, supervisors, team members), organizations (ministries, departments, agencies), larger groupings or networks (ALICT-LATIC country chapters, ALICT-LATIC Alumni Network), sector, and national level.

Specifically, the ALICT-LATIC impact study sought to answer the following key questions:

- To what degree and how has the ALICT-LATIC Programme impacted on participants' attitudes, knowledge, skills and behaviour as demonstrated through their current leadership practices and behaviour in ICT and KS professional development?
- To what degree and how have the ALICT-LATIC Programme alumni members impacted upon their workplaces, organizations, communities or networks, sectors and at national level through their leadership in ICT and knowledge society roles?

Research Methodology

The research approach was informed by the Kirkpatrick Model,⁴ which can be used in evaluating the effectiveness of capacity building and training programmes. It focuses on four levels:

- Level 1: Reaction - evaluates how participants responded to the capacity development programme
- Level 2: Learning - measures if participants actually learnt the material
- Level 3: Behaviour - assesses whether participants are practising what they learnt on the job
- Level 4: Results - evaluates whether the programme positively impacted the organization.

A mixed-methods approach was adopted for the study. It involved the following:

- Quantitative data, gathered from an online survey, was analysed to obtain a measure of change in alumni leadership behaviour as a result of their participation in the ALICT-LATIC Programme.
- Qualitative data, gathered from face-to-face interviews, was used to gather in-depth, detailed descriptive information and explanations about the ALICT-LATIC alumni's experiences, and evidence of behaviour and attitudinal changes following participation in the programme.
- Qualitative data, gathered from telephonic Skype interviews, was used to augment the quantitative and qualitative data noted above and gather additional details.

These are described in more detail below.

Quantitative data collection and analysis

A retrospective pretest – posttest design was adopted to obtain a quantitative measure of the impacts and effects of the ALICT-LATIC Programme on alumni. All 487 alumni of the programme were invited to participate in an online, self-administered survey. The survey questions were rated on a Likert-type scale against various measures of different leadership styles based on a 360-degree questionnaire that was used by the programme. The questionnaire interrogated ALICT-LATIC Programme alumni on their leadership behaviour prior to the programme (pretest) and after the programme (posttest). These questions were randomized to reduce the effect of order bias (i.e. respondents could be inclined to show a change between baseline and end-line status if the pretest and post-test questions were asked concurrently).⁵

A response rate of 43% was achieved, with 208 participants responding to the survey. Responses were received from participants in 21 countries.⁶ The table below shows the distribution of online survey respondents by country.⁷

Table 1 *Distribution of online survey respondents*

Country	Number	Percentage of total respondents
Botswana	11	5.29
Ethiopia	13	6.25
Finland	1	0.48
Ghana	6	2.88
Ivory Coast	7	3.37

⁴ Kirkpatrick Partners. (no date). The Kirkpatrick Model. Retrieved from <http://www.kirkpatrickpartners.com/OurPhilosophy/TheKirkpatrickModel>.

⁵ See Appendix B - Online Quantitative Survey Questionnaire

⁶ The range of countries reflects where AUC officials work and some participants moving to other countries after the programme. This might be different from the country that they were registered under for the training

⁷ Note: The percentage is reported as a proportion of the total respondents to the survey and not as a proportion of the total population of alumni from each country.

Country	Number	Percentage of total respondents
Kenya	30	14.42
Malawi	19	9.13
Mali	2	0.96
Mauritius	13	6.25
Morocco	17	8.17
Mozambique	5	2.4
Namibia	4	1.92
Nigeria	3	1.44
Rwanda	17	8.17
Senegal	13	6.25
South Africa	5	2.4
Tanzania	14	6.73
Thailand	1	0.48
Uganda	19	9.13
Zambia	7	3.37
Zimbabwe	1	0.48
Total	208	100

To analyse the quantitative data, the variables (questions of interest) were collapsed to obtain an individual, composite score for each of the areas of interest. Aggregate, mean scores were obtained for the entire group of variables. A repeated-measures, t-test (significance test) was applied to determine the significance of any observed difference. The effect size was calculated using Cohen's standardized mean difference (d)⁸ to obtain a measure of the strength of this difference (change or impact) and a standardized mean (average) difference.

Qualitative data collection and analysis (case studies)

The researchers conducted face-to-face, individual and group interviews with key informants of the programme in four African case study countries, viz: Kenya, Mauritius, Morocco and Zambia. The four case study countries were selected by the GESCI implementation team based on the following criteria:

- Knowledge Society Index ranking by the International Telecommunication Union (ITU) in terms of high – medium – low
- Connectivity challenges in accessing the content modules
- Countries that participated across the cohorts from 2012 to 2015
- Representation of regions (Southern East and West/North)
- Representation of participants in respect to overall number of participants engaged in the programme
- Performance of participants with overall scores (high – medium – low) including their contributions in the alumni network
- Representation of Anglophone and Francophone countries
- Interest level shown by the participants for the Dublin City University Graduate Diploma (high – medium – low)
- Reflections with Steering Committee (AUC and MFA Finland) and their advice and approval.⁹

⁸ Cohen's standardized mean difference is measured by calculating the difference between the mean scores before training and after training, and dividing this by the standard deviation. Cohen suggests that $d=0.2$ be considered a 'small' effect size, 0.5 represents a 'medium' effect size and 0.8 a 'large' effect size. See Becker, LA. (no date). Effect Size. University of Colorado Colorado Springs. Retrieved from <http://www.uccs.edu/lbecker/effect-size.html>.

⁹ Source: ALICT-LATIC Programme Manager

Using simple random sampling techniques, a total of 23 participants were selected from each of the selected countries. In total, the study team visited the four countries separately, and interviewed a total of 42 respondents.

Table 2 Distribution of key informants by country

Country	Number selected	Number of participants	Response rate
Mauritius	23	8	34.8%
Zambia	23	8	34.8%
Kenya	24	9	37.5%
Morocco	23	17	73.9%
Total	93	42	45.2%

An interview schedule was developed to guide and direct the interviews, based on the purpose of the study and the Kirkpatrick Model guidelines.¹⁰ The qualitative data was analysed using thematic coding supported by QDA Miner software. The coding themes were predetermined by the objectives of the study, and included the four Kirkpatrick levels of change (reaction to the programme, learning, behavioural outcome, and impact), as well as the four levers in the domains of change. Data on the domains of change was further categorized according to the level of change – micro (individual), meso (organizational) and macro (national or regional).

Supplementary qualitative data collection and analysis (Skype interviews)

To supplement the data gathered from the online survey and the case study interviews, selected interviews were conducted. Two to three respondents were selected from each of the case study countries (i.e. Kenya, Morocco, Mauritius, and Zambia). In total, eleven Skype interviews were conducted. The Skype interviews were conducted in October 2016, and thematic analysis was used to analyse the findings.

Consent was obtained from all participants in the study. The quantitative data is triangulated with qualitative information from country case studies and Skype interviews.

Limitations of the study

One of the limitations of the study was that it relied on participants' ability to recall their knowledge, behaviours and attitudes from approximately four years ago (the first cohort participated in the course in 2012). Thus, those in the first cohort may have experienced more difficulty recalling as opposed to those who completed the course in 2016, leading to a 'recall bias'.

Other limitations of the study (faced during country visits) were:

- a) Time constraints of ALICT-LATIC alumni especially those based in Zambia and Kenya which shortened the duration of case study interviews and time for interrogation of all key questions.
- b) Invalid contact details of alumni especially for participants in Kenya which delayed setting up interviews and gathering information.
- c) Lack of travel arrangements to meet with potential case study participants located outside of capital cities, resulting in inadequate inclusivity and potential for biased sampling.

¹⁰ See Appendix C- Key Informant Interview Guide

These challenges and limitations were addressed in consultation with GESCI. To address them, email based questionnaires sent to participants who were located outside of the capital cities, and additional Skype interviews were held.

Findings

This section is organized and based on the Kirkpatrick Model on the four domains of change, viz:

- Reaction (how participants responded to the capacity development programme);
- Learning (whether participants learned the material);
- Behaviour (whether participants are practicing what they learned on the job); and
- Results (whether the programme positively impacted the organization).

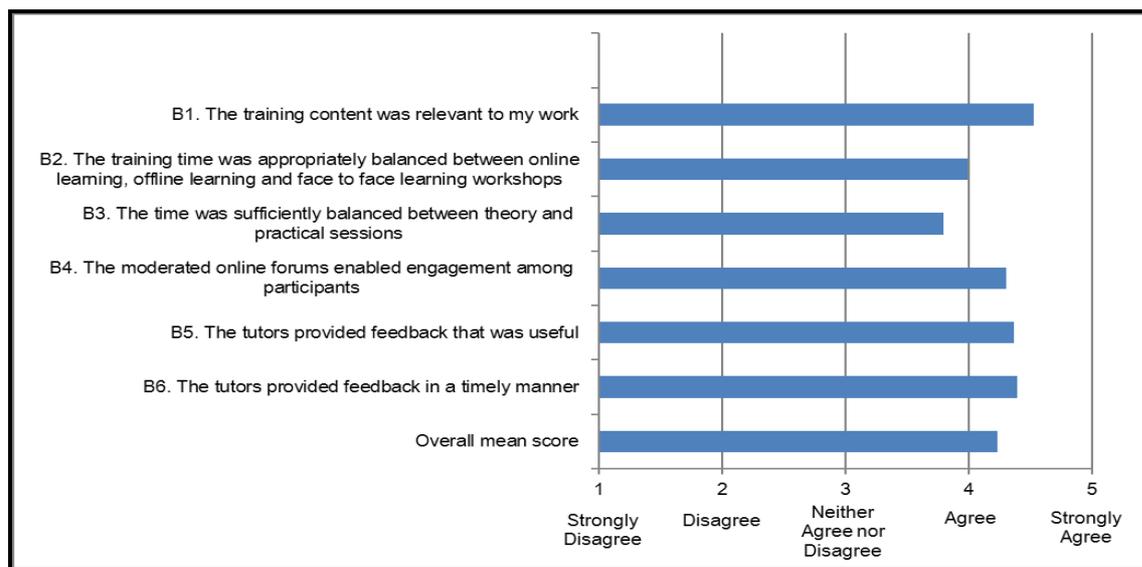
Reaction to the programme

Overall, respondents reported very positively on the course, expressing that felt that the course achieved its objectives, and was useful to them. For example:

...this is the best course that has impacted what I do. (It was a) practical, hands-on course. I go back to what I was taught...(and) keep making reference to it. Really, it was a useful programme. (Participant, Kenya)

Figure 1 below denotes that there was strongest agreement on a) the relevance of ALICT-LATIC programme to their work, and b) the timeliness and c) usefulness of feedback from their tutors. A less favourable response was received regarding the adequacy of time allocated for learning and training.

Figure 1 Participants' reaction to the programme



Relevance

Participants explained that they signed up for the programme because it was relevant to their work and confirmed that the programme was new and different from what they had experienced or expected. It was relevant and had lessons that were applicable to their areas of work. For example, one participant noted the following:

The subjects were interesting on a personal level. On a professional level, managing a team and making it work is hard and is a task that the government contracts outside help on. It's time for the government to use their own capacities to adapt with the change, as there are transitional time slots where there is a big change and it's hard to manage. You need to keep the team motivated to be focused to achieve the goal. I learned new tools and information. (Participant, Morocco)

Course content

Overall, participants responded positively to the content of the course. In general, participants appreciated all the elements of the course. Depending on their previous knowledge and experience, different participants found different aspects more useful. For example:

ICT component, learning how far the fibre is laid, general connectivity, different electronic system, and how we can have a central repository. (Participant, Zambia)

The component where speak about STI was very important. (I am) quite familiar with ICT and education – but the STI component. (Participant, Mauritius)

Innovation, education... issues of education across borders, innovative ways of delivering instruction to people, that was part of what I really enjoyed...But what was interesting was innovation (and) delivering instruction. (Participant, Kenya)

In fact, when we went for the course, the main thing that I learnt was the kind of reflection we had to do and leadership and knowledge. The reflection part was important. We think of leadership as something we learn, (but) reflection is important. (This was) like a revelation. (Participant, Mauritius)

21st century skills – creativity, collaboration, problem solving and critical thinking. (Participant, Kenya)

Course format

There was a general level of satisfaction regarding the format of the course and the blended learning approach. For example:

I think it was a good course, because it had different teaching methods – face to face, online, had chats – everything was well done. (Participant, Zambia)

At least for me, it worked well. I can't take leave to go and follow the course. The part time and blended approach and the interaction with the instructors and tutors were important. Discussions were very rich. And (the) discussions, although at times we disagreed, was very constructive. But I think I had the opportunity where the course was fully sponsored by different stakeholders. This model should be maintained for developing countries. It is difficult for participants to pay for high profile courses. (Participant, Mauritius)

Some were satisfied with the level of engagement offered by the course:

I also liked the level of engagement. The method wasn't one to one (and) most of the time we were busy with work. (Participant, Zambia)

There were a lot of documents to read every week. The way they push us to produce. Each two to three weeks, we have been asked to write. Working in teams was one of the best things. (We were) producing a lot of things in terms of writing (such as) essays and articles. (Participant, Morocco)

However, one respondent felt that the course delivery could be more engaging:

We need chat which is lightweight, that we can use anytime, access a mobile internet platform, anywhere. (They) need to use platform(s) like Skype to change the delivery of the course...How can you deliver a course so that the course is more lively? Right now the chat is not giving it and the forum is not vibrant. We can do more with Zoom and (you can) improve based on new tools and platforms that are available now. The discussion forum was asynchronous. The chat is asynchronous and not engaging enough...chaotic...video interaction is more engaging...useful and can...support more sharing. (Participant, Mauritius)

The programme approach that involved group work was well received. Many participants alluded to working in groups as being particularly useful, and felt that it enhanced their learning experience, especially the potential it offered for networking and to grow their professional networks. This was important to them especially in contexts where government departments may work in 'silos' vertically and within a culture of not sharing information. Specifically, respondents reported learning new ways of collaborating with each other on joint projects. For example:

I was an independent learner so to speak but also it taught me how to collaborate with others through group projects. It has also helped me at work, translating what I have learnt there. (Participant, Zambia)

Chat sessions and forums helped me first to meet virtually colleagues of different sectors and different countries, and to follow the development (that) is done the area, especially in neighbouring African countries. I really enjoyed (this)... I found out that in each of our countries progress is being made. So, I think it would be interesting to unite efforts in the continent to achieve development in various sectors through exchange experiences within the framework of South/South cooperation. (Participant, Morocco)

I have more networks now and learned that you may not necessarily need to be facilitated to deliver your work but you can use your networks to do so. (Participant, Kenya)

(I had the) opportunity to interact with peers in Mauritius...(and) interact with colleagues in other countries, (and learn about) other challenges and opportunities in other countries which was a very important impact of the course – we had the opportunity to network. For Mauritius, the fact we were in the same course, improved communication in the different units – for example, if I want to talk to someone in the ministry (I have a contact person). With external participants, I have been able to learn from what they did (right and) wrong, what we should avoid – I learnt from them. (Participant, Mauritius)

I am able to reach out to a number of my own classmates to sound off an idea or ask them what they think of something. (I was) able to build network to exchange ideas and expand my social network. (Participant, Kenya)

One respondent felt that there was a need to encourage more active participation within forums:

I think that especially when you are on the forum when you are discussing something, a good number of people did not have anything to offer, but fearing if they did not participate they would lose marks – if in one way that could be improved. People just say concur without elaborating. I was not happy – you would be debating – people just chip in just to show they are participating when in fact they have not said anything. If there could be a way of probing... If a lecturer follows the discussion. If they can be probed – what do you concur with, what is your opinion? (Participant, Zambia)

Another participant also felt that clear feedback should be provided for submitted work. It was also suggested that chats and discussions should be held in the evenings to encourage greater participation.

Connectivity

Some ALICT-LATIC participants experienced difficulties with internet access and poor connectivity. The blended learning approach required the participants to do a substantial amount of work online. This required access to information that was only available online. However, the instability of the internet networks in some countries (for example, in Morocco) posed a real challenge and further impacted on the time demands of the course for participants.

Time

The programme placed unanticipated high demands on participants' personal time. This was particularly noticeable for participants in the first cohort, where for instance, modules were '*delivered back to back with no break in-between*' with one module submitted on a Friday and the next starting immediately the Monday. This was adjusted in subsequent programmes. Nevertheless, several participants reported that they had underestimated the time commitment for the programme, specifically, they felt that the estimated time frame provided was misleading, and they had to commit to more time and effort than they had planned. For example, the programme indicated that participants would only need to be engaged for 15 hours a week, but upon enrolment, they found that they would have to be engaged at least 20 hours a week, which was challenging to accommodate given their work and personal responsibilities. For some, who were pursuing other studies (such as PhDs) or held demanding work positions, it became difficult to find a balance between juggling their various commitments within the available time. This resulted in participants not completing the course, while others were overwhelmed and 'stressed' which may have impacted on their performance. In some instances, this resulted in a situation where a few 'carried' the workload and submissions of the entire group.

We happened to be the first people to finish the course. At that point it was too deep and too detailed. And the time wasn't enough to go through (the content). The detail very good and critical, but the time to go through exercises (was insufficient). (Participant, Kenya)

When I agreed to take the training, for me it's a challenge to do it in parallel with my work. (Participant, Morocco)

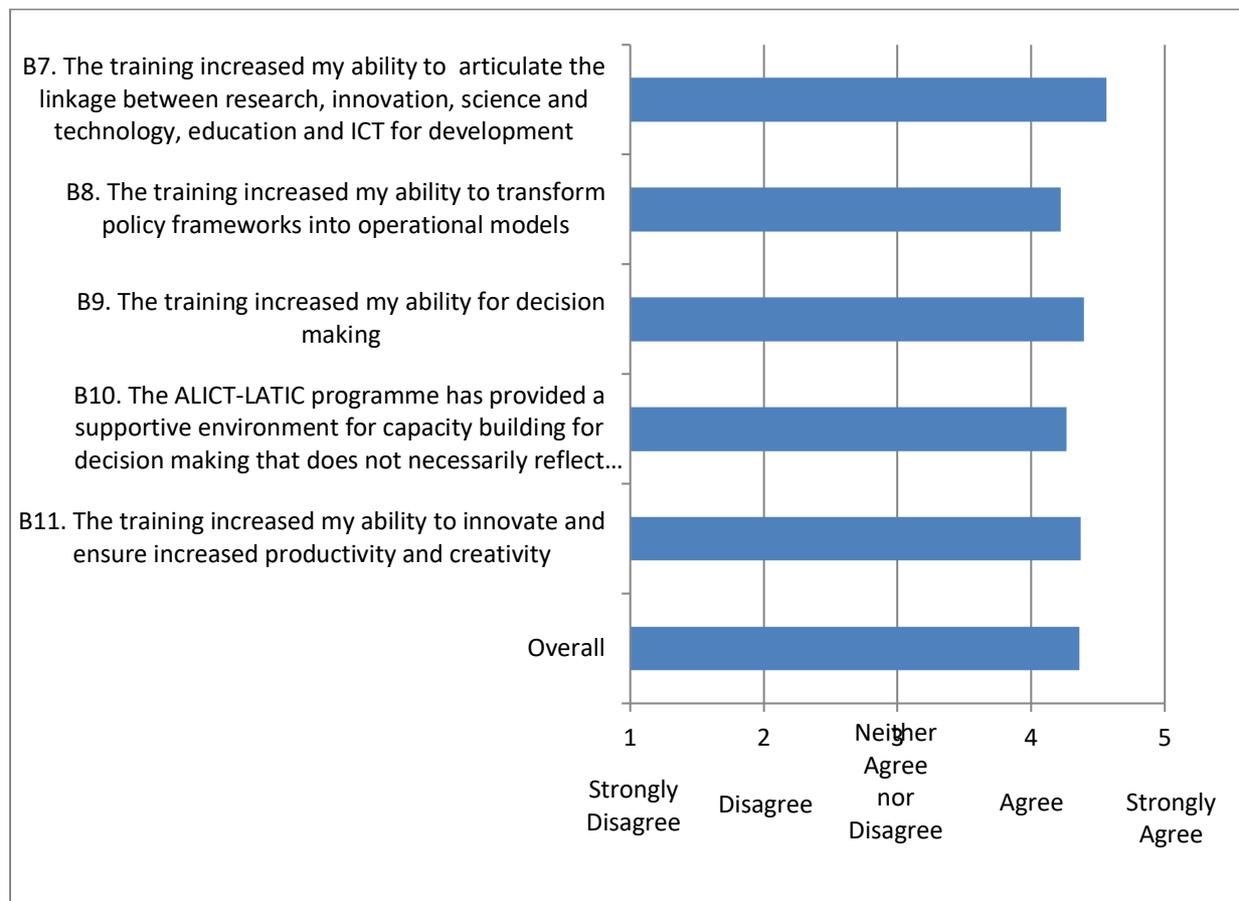
Despite these challenges however, the ALICT-LATIC Programme alumni's reaction to the programme was overall very positive.

Learning from the programme (including knowledge, skills and attitudes before and after the programme)

To accurately evaluate the ALICT-LATIC Programme’s learning benefits, participants were requested to respond to survey questions rated on a six-point Likert scale. These questions were pegged on the 360-degree questionnaire and were focused on knowledge, skills, and attitudes before and after attending the ALICT-LATIC programme. Additionally, participants were requested to rate their levels of agreement to key questions pertaining to domains of leadership development and capacity building needs required of public sector leaders in the 21st century.

As evidenced in Figure 2 below, all surveyed ALICT-LATIC respondents ‘agreed’ that the course had increased their skills and abilities on various levels. These include a) articulating linkages between research, innovation, science and technology, education and ICT for development; b) transforming policy frameworks into operational models; c) decision-making; d) innovating and ensuring increased productivity and creativity; and e) providing a supportive environment for capacity building for decision-making that does not necessarily reflect the past ways of doing things.

Figure 2 Self-reported learning on core domains of leadership development



The quantitative results indicate that the programme had a positive impact on participants’ learning. The researchers asked participants to rate their status on knowledge, skills and attitude parameters derived from the 360-degree questionnaire as below:

- Knowledge parameters
 - I know how to manage by objectives (MBO).
 - I know how to handle personal issues.

- Skills parameters
 - I have the ability to organize and manage projects.
 - I have the ability to create development strategies.
- Attitude parameters
 - I have the ability to confront individuals with different expectations.
 - I have the ability to understand persons with different backgrounds.

Table 3 below shows the level of change in learning before and after the course. The change is categorized under reported change in knowledge, change in skills, and change in attitudes. The responses indicate a significant one point difference in their knowledge, skills and attitude after participation in the course.

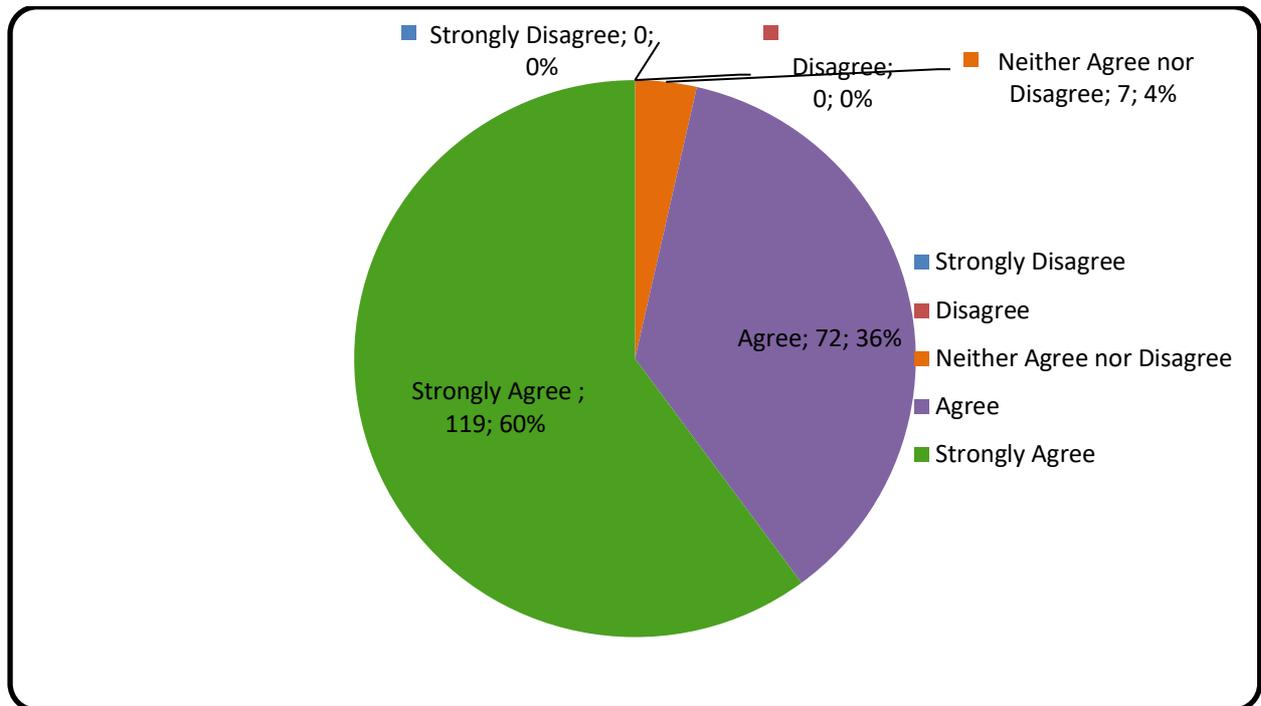
Table 3 Reported changes in learning outputs before and after the course

Learning output	Effect Size	Mean (SD)		t statistic	
	Cohen's d	Before training	After training	t value	p-value
Change in knowledge	1.04	4.21 (0.91)	5.06 (0.71)	t(151)=11.21	0.0000
Change in skills	1.09	4.26 (0.85)	5.10 (0.70)	t(158)=11.26	0.0000
Change in attitude	1.13	4.23 (0.90)	5.14 (0.73)	t(157)=12.51	0.0000

The innovation ecosystem and its linkages between research, innovation, science and technology, education, and ICT for development

The ALICT-LATIC programme was successful in increasing the understanding of participants on the innovation ecosystem and its linkages between research, innovation, science and technology, education and ICT for development. Most respondents to the quantitative survey strongly agreed (60%) while others agreed (36%) that the ALICT-LATIC programme had increased their understanding of the linkages between research, innovation, science and technology, education and ICT for development.

Figure 3 Agreement that the course improved understandings of the innovation ecosystem and its linkages



This finding was supported by the case study respondents who largely reported that they now have a better understanding of the innovation ecosystem and most especially the role of ICT for development of knowledge societies.

I think we learnt things (such as) combining the use of ICT on education and then science, technology and innovation... Most of the initiatives...come as separate entities, this course combined science, technology, innovations (and ICT in Education), so I liked that combination. I liked the level of content and the level of depth...a lot of materials were given to us. (Participant, Zambia)

I am ICT expert originally and in education...I learnt a lot on STI and the futures thinking methodology, signalling and scanning environment. Maybe I was using it a smaller scale, (but) now I know more about it. (I have) seen it and use it. (Participant, Zambia)

Others noted how they are now able to see the different elements within a broader perspective.

...now I am able to look at the bigger picture as opposed to looking at things in isolation. (Participant, Zambia)

For one participant, the course fostered the potential to become more open-minded:

...mainly to be open minded to see opportunities to learn from a much wider sense of the environment and other sectors, rather than just focussing on my own sector...to draw understandings of other systems in the world really opened up my mind to think widely and globally – to think of innovations and being competitive. (Participant, Kenya)

Improved understanding of the workplace

The most common result reported was an improved understanding of the work environment and structural changes that took place in the organization. According to participants, the course has enabled them to better understand and interrogate the workplace structures and changes that have been instituted. For example:

We used to be a centralized computer service and we have now been transformed into a centre of excellence for e-governance and ICT. We are coordinating the implementation of e-government in the country and ICT services. So, we are getting the understanding from what we learnt from ALICT of the benefits that e-government brings in the country. It is working out for us. (Participant, Zambia)

It's a learning and growing process. We started integration of ICT in education in 2011. Five years down the line, we have reached a point where we are improving and learning from mistakes and experiences. The learning concepts brought out in the course are very much still there. Basics of leadership enable us to grow on leadership. (Participant, Mauritius)

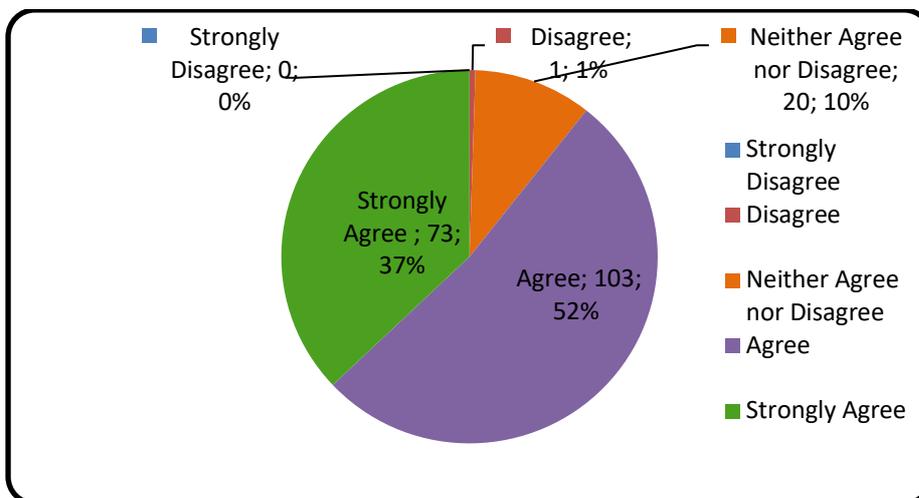
For one participant, this understanding has increased her input in the organization:

My proposals are increasingly retained and appreciated...I work with different national and international partners and our projects together form the basis of policies, strategies and even the reforms in my country...I have the duty to lead these projects, taking into account all internal and external factors that may influence the achievement of objectives including the ultimate objective i.e. the impact on development. (Participant, Morocco)

Improved decision-making

As shown in Figure 4 below, respondents agreed (37% strongly agreed, and 52% agreed) that the ALICT-LATIC programme had increased their ability for decision-making that does not reflect the past way of doing things.

Figure 4 Agreement that the course has increased their ability for decision-making that does not reflect the past way of doing things



Data from the interviews also suggest that participants have improved their decision-making skills. For example:

I have become a more informed decision maker and a leader... getting to know how to convince them to do what we have in mind, through the application of foresight, futures thinking, scenario building, strategy. (Participant, Mauritius)

I can vouch for decisions I make. I see quite a lot of differences with my colleagues who have not gone through such training. They get most influenced about that they hear... objectivity in decisions, I am a bit more objective. (Participant, Zambia)

At the organizational level, decision-making appears to be easier if participants hold a decision-making position. For example, in one instance organization level change was easier because the more senior

official in the department had undertaken the ALICT-LATIC programme, and could influence change in his organization:

The director had previously taken the course and was applying what he had learnt from the course. He also, in the process, transferred to us what he had learnt. So, when I took the course, I could recognize what I could remember had been passed on to me... Our centre is one of the most proactive centres in the way we do things, and what we have learnt from the course may be a factor in how things are done in our centre. (Participant, Mauritius)

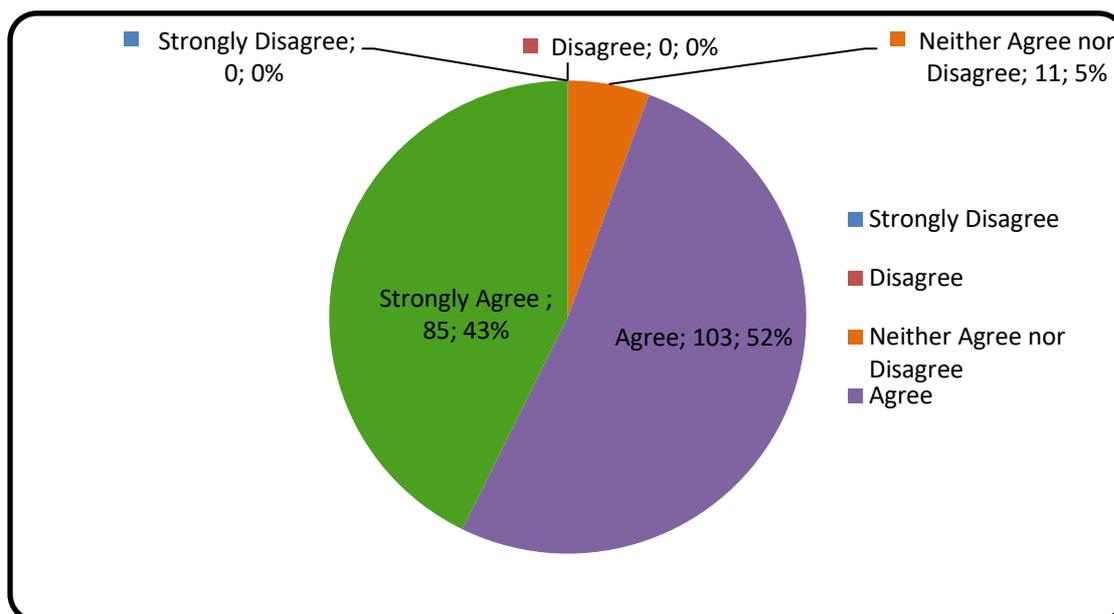
For another, the course helped him prioritise ‘high impact’ decisions:

I have also learnt to focus on high impact decisions in a situation of limited resources and a number of programmes to implement. I learnt to objectively evaluate the different activities and appropriately prioritise those with higher impact... on organizational development and the clients who would probably want services from you, and the people who want to benefit. (Participant, Zambia)

Support and facilitation to ensure increased productivity and creativity

As with other domains, the alumni agreed (43% strongly agreed, 52% agreed) that the course had provided tools to increase productivity and creativity.

Figure 5 Agreement that the course has increased their productivity



Such productivity has enabled participants to set up work environments that are conducive to progress. This is due to their new-found appreciation of the importance of team work. Participants noted improved levels of engagement with colleagues (subordinates) and have created a supportive environment that encourages participation by all.

It helped me to be a 21st century leader. In the past, you want your ideas to reach top committees. But this time, I allow my subordinates to bring in ideas that can be modified accordingly, so that they feel like part of the leadership. I involve them even in research/calculations/surveys so we can improve on our services by using good statistics. I'm always having it in my mind, to be open to others. (Participant, Zambia)

In terms of how I have been working with the teams, in making use of every person in the team and exploiting their various expertise. It is not often you find people who are good at everything. (Participant, Kenya)

Right now...one of the processes is quality assurance. We formed teams working online on the curation process. They curate or vet the content and give it a quality mark, and these guys are across Kenya. So I learnt that from the course...in terms of building teams, and also in terms of management – how to manage various ways of thinking. (Participant, Kenya)

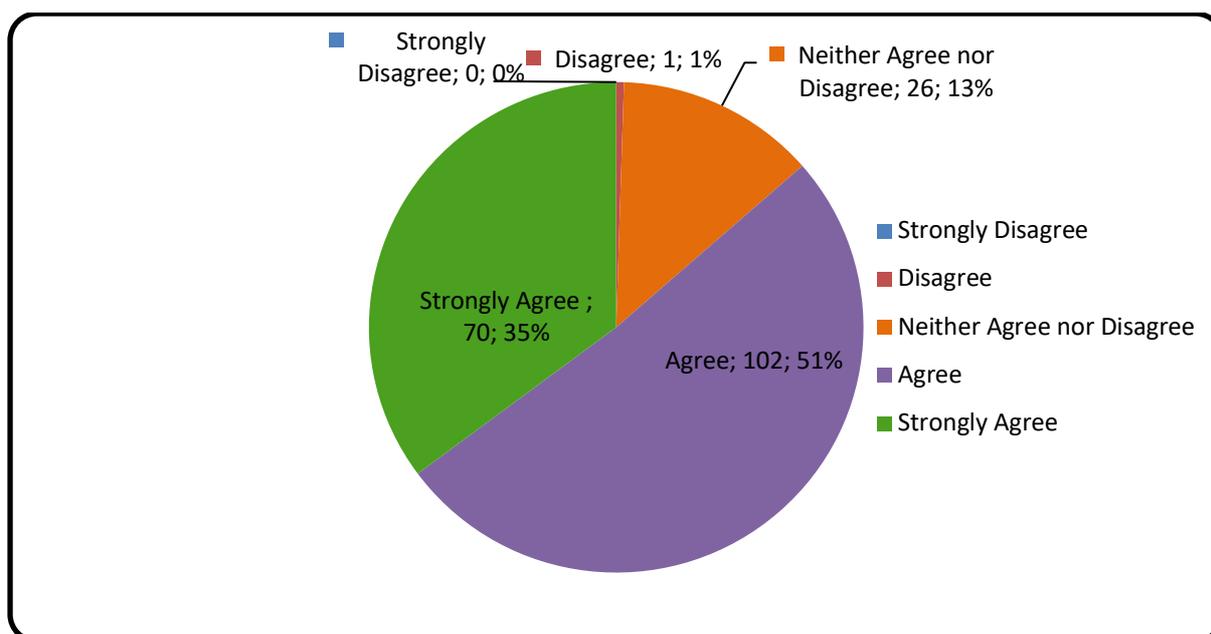
Another reported tool which has increased productivity for some is time management. For example:
So even my personal work and my attitude towards our work – I try to be as efficient as possible, time management was very critical. Time management skills have improved tremendously. (Participant, Zambia)

I'm more productive. I can manage my time better than before (Participant, Morocco)

Policy transformation into operational models

There was strong agreement from the questionnaire survey respondents that the course had increased their ability to transform policy frameworks into operational models, with 35% strongly agreeing with the statement, and 51% agreeing. (see figure 6 below).

Figure 6 Agreement of respondents that the course had increased their capacity to transform policy frameworks into operational models



Some participants mentioned that the course increased their ability to transform policy into operational models, although they did not have the opportunity to practice this, unless they are a head of unit (department or institution). They did however mention some actions that they have taken due to their acquired skills. One respondent highlighted that he reviewed his individual work activities to align them to the organizational strategy or policy:

The course helped me to better understand how to execute [the strategic plan] knowing that you are the one who is supposed to do the implementation. I understand what a plan is, how it's supposed to work and how it's supposed to be implemented; also, how evaluation is to be done when you are doing reporting. That became handy. (Participant, Zambia)

Some respondents reported that they had used their learning to review and interrogate the organization's actions, and used the findings to propose new frameworks or strategies for implementation. As a respondent from Mauritius stated:

I think I have contributed in coherence with decisions that we take. I have made management think about issues. For example, we are recruiting more students, which implies that we will have to accept students with lower grades. But at the same time, we want to get our degree accredited; which implies we have to work more to get these students through the centre. Now, we need to reduce the number of contact hours so that the burden is curtailed. Clearly, I have shown [the] incoherence because you can't recruit less capable students, we want to produce higher grades and reduce contact hours. (Participant, Mauritius)

Beyond these understandings and abilities, participants reported numerous other learning areas as a direct result of the course. These are summarised below.

Participants were appreciative of the various 'tools' they gathered from the course. Respondents mentioned the personal development plan and leadership journal as useful tools. Several participants highlighted the usefulness of the 360-degree tool, and one respondent reported using the tool annually with his staff members to evaluate his performance, and as a basis to improve his leadership. Other examples denoting the usefulness of these tools are:

When I made the evaluation 360, I tried to change my behaviour based on the comments of my colleagues, my staff and my supervisor. (Participant, Morocco)

On a personal level, setting goals for my leadership role which are futuristic. I have been working for a long time (where my focus was on) working and achieving organizational goals. The PDP (Personal Development Plan) was really helpful...to make goals for yourself and through your work see how you attain your personal goal...I was looking at the future. (These are) some of the tools I learnt that were very helpful. (Participant, Zambia)

Leadership Journal...Revise my way of organizing work that allowed me to learn to prioritize and allocate tasks. (Participant, Morocco)

(The course) helped me to understand and use a different environmental scanning tool – SWAT, Pastel and Horizon scanning...this can be directly integrated in our normal work. Before taking the course I did not know about the futures tools – because it was a new concept – futures and the application. And I think this has been an extremely important component of the course. (Participant, Mauritius)

In most instances, respondents reported that participating in the course allowed them to sharpen their skills and further develop the skills that they had.

We did the assessment...where peers assess you...strengths, weaknesses and things to improve on. There are some strengths I didn't realise I had and some weaknesses (and I realised) I needed to do something to improve... it also encouraged me to ensure I sharpen leadership skills and look opportunity to take on leadership roles. (Participant, Zambia)

For one participant, the timing of the training came at the right time – just before the development of a national strategy and he was therefore able to apply all the principles and tools that he had learnt during the course to develop the strategy. For another, it opened up the possibility to see the 'bigger picture':

One of the main things I learnt was seeing a bigger picture- national picture of way forward for ICT. (Respondent, Zambia)

Respondents further noted their appreciation of the importance of building a knowledge society:

I would say just this idea of creating a knowledge society – we've reached a stage in Zambia when people are really now fired up, getting used to social media, having access to information online. (Participant, Zambia)

Also since I am working in the educational sector, it was very interesting to learn about knowledge society and the different pillars and how we can help and contribute to achieve a knowledge society in our country. (Participant, Mauritius)

The other one was building knowledge societies. Previously we have programmes and courses where there is no follow up with people we trained with. Here we put up a COP (Community of Practice), especially for programmes on line. We keep tab with learners we trained since cohort one, and they have been able to build their own knowledge - 'Online Primary Teacher Orientation Course'. (Participant, Kenya)

Managing information for the country as a whole – society that harness information to our benefit. (Participant, Zambia)

Furthermore, several participants noted the benefits of learning about policy:

We also learnt about policy coherence. During the course it made us realise how important policy coherence is. It helps us to drive the same vision and objective. (Participant, Mauritius)

For example, I am involved in drafting policy for government in ICT skills. This futures thinking is very relevant to what we are doing in Mauritius in terms of drafting policies and coming up of policies for the future. (It is) relevant to what I am doing. I am using it almost every day. (Participant, Mauritius)

One respondent highlighted that he developed coordination skills as he was the ALICT-LATIC country coordinator:

I was the country coordinator. It was coordinating everyone here. I was the youngest and I had to talk to all the groups. I was the group leader for my group so I had to make sure all the assignments done and submitted... coordination skills have improved. (Participant, Zambia)

Another responded highlighted that he is able to apply the skills learnt to a variety of settings:

I think that from my personal skills, even if I am working at the Ministry of Education, or as a freelance expert - I am working at universities and I am working for USAID project, for an international project – all the skills I developed was in a professional way. I am using it on a personal level. (Participant, Morocco)

Sharing learning benefits

Several respondents reported that they have shared the learning from the programme with other individuals including colleagues and family members. Some have shared learning through informal discussions, while others have shared through more formal channels such as organizational forums, training and capacity building talks, and fully developed training modules on leadership in ICT which they deliver to students from academic institutions.

Encouraging participants to engage in further learning

Some participants reported that they, as a result of the programme, have conducted further learning exercises, either to increase their understanding of the innovation ecosystem, or better understand their ecosystem. As described by a respondent from Zambia:

I did some research on internet connectivity, if people are using secure internet. Just moving around with my phone, I was able to pick wireless access point names and I was able to see what type of security they were using. I did that for a number of banks. I was amazed to find that some banks were using very weak security points. So I did a paper and submitted it to (my lecturer and colleague) to review so that we could publish it. (Participant, Zambia)

Behaviour (including leadership)

To determine whether the ALICT-LATIC programme achieved any significant impacts on individual behaviour change the researchers administered parts of the 360-degree questionnaire to research participants. This is a self-assessment tool to help individuals define their leadership styles. Analysis of survey participants' self-assessments concerning their own leadership styles before and after the programme revealed a significantly large 'effect' (change), with most participants showing a large positive change in all leadership styles. The most significant impacts were evidenced in reported findings on change leadership, transformational leadership and new age leadership. These are highlighted in Table 4 below.

Table 4 Change in leadership style before and after the course

Leadership style	Effect size	Mean (SD)		t Statistic	
	Cohen's d	Before training	After training	t value	p-value
Transactional leadership	0.855468	4.30 (0.77)	4.90 (0.67)	t(141)=10.43	0.0000
Transformational leadership	1.068604	4.29 (0.73)	4.99 (0.64)	t(137)=11.87	0.0000
Systems leadership	0.832727	4.20 (0.98)	4.94 (0.79)	t(152)=10.15	0.0000
Change leadership	1.077417	4.24 (0.82)	5.07 (0.63)	t(147)=13.09	0.0000
New age leadership	1.014315	4.10 (0.82)	4.83 (0.63)	t(146)=11.71	0.0000

Effective leadership

Interviews with ALICT-LATIC participants in the four case study countries revealed that the course experience has increased their confidence as leaders. For example:

I realized my potential. Earlier, I was letting others take the lead. When I'm given an opportunity, I'm determined to take leadership. (Participant, Zambia)

This resulted in a change of leadership style. Many were now more willing to take initiative and additional responsibility. Others said they were more inclusive and solicited the views of team members more often, compared to before participation in the ALICT-LATIC programme. For example:

Previously I was more transactional leadership style, but now it's more a mix of transactional and transformational leadership style. (Participant, Mauritius)

Firstly I think I was too egocentric...as a leader, I was not a good listener. I didn't have much patience, but then I had to learn to adapt, listen to other voices. I wasn't a good team player. I had to work on that arising from the different exercises that I created from the personal development plan and... 360-degree. It helped me to tone down my opinion of myself, to listen to others, consider what we do as a team...the collective effort rather than a personal one. (Participant, Zambia)

It changed my way of doing things and know how to manage the people under me and be able to listen to their views and give them a chance to present their ideas. (Participant, Kenya)

I think the ALICT course has been helpful in several ways. It has helped to improve my leadership skills especially transformational leadership skills. For example, we are more adaptive to change and at times we question the old way of doing things more regularly as opposed to before – we support change management, improve processes. (Participant, Mauritius)

Some participants reported a marked change in their leadership style that was characterized by a shift from an individualistic approach, to a collaborative approach where they sought input from peers or junior colleagues. Participants reported that in the past they did not seek input from colleagues,

especially those in a more junior position, when it came to decision-making. Following the training, they now focus on creating a collaborative environment where ideas are sought through discussion and decisions made through consensus. Thus, there was a shift from a top down approach where the leader or top management determines actions to be taken and passes these down to an approach where junior staff are included in the decision-making process. For example:

What I learnt from the course is you never say, "I." It is, "we." When I say we, I mean the whole team, because we are collaborating. This is a direct impact of the course. (Participant, Mauritius)

In the past leadership used to suppress people. You made your leader to be a giant for nothing. And all these people who were suppressed may have very good ideas. But those ideas cannot come out because you are kind of a bully. Now, you share and explain your vision with them, you let them speak out, you give them opportunity to analyse that which you intend to do. Give them the opportunity to criticize to hear their views also. It's very important because you can never know it all. (Participant, Zambia)

Fostering such teamwork has enabled proposals to be more easily accepted, and funding to be granted, for example:

The way we network and work in teams, we influence what we want to move forward as a department. (Participant, Kenya)

Because we are very united – there is no divergent voice – we go in one voice and we get what we want. People don't realise we work behind in the background. I convince them on how to do this. So we go to the sector wide area...ours are streamlined. We write logical justification and everyone (in the team is) able to answer questions (posed to them) and treasury is convinced. (Participant, Kenya)

Planning and futures thinking

Another marked change was in relation to developing a more proactive and futuristic outlook to planning. Several participants specifically mentioned 'futures thinking' and 'forecasting' as particularly significant tools and skills which they gained. They now apply a forward-looking approach to decision-making with careful consideration of how current actions can impact on future plans:

One of my best (skills) is forecasting – looking at scenarios and taking on work possibilities that can happen – and getting prepared for them. This is really something which helped me a lot. As I was applying for the job, I was able to do a lot of scenarios. (Participant, Kenya)

... we think about what will happen five to ten years from now. This approach has helped me to discuss with other people how we are feeling and how we want to move forward... The approach is good. (Participant, Mauritius)

We are using futures thinking a lot. We already plan something, then able to think through it and see how it's going to be three to four years ahead, road blocks (we could) encounter and how to mitigate (these). (Participant, Kenya)

...whichever project (I am involved in), I use the futures tool. It is done in the mind if not done on paper. (Participant, Mauritius)

The most important step in any project is the "planning stage". And since learning LATIC, I try to apply the process that we have been taught to ensure effective implementation of the project. (Participant, Morocco)

This has fostered more analytical thinking:

I am more patient, I am more insightful, I am able to look at bigger picture at anything that comes into my work (Participant, Zambia)

I think my thinking has changed. I always got more than one scenario...in terms of thinking, prior thinking, thinking from different perspectives...most important factor(s) in strategic decision-making. (Participant, Mauritius)

Persuasiveness

Another significant skill mentioned by several participants relates to the ability to make persuasive arguments and 'market' ideas to achieve buy-in and to promote their ideas. For example, a participant from Kenya who is working on the 'Kenya Education Cloud' mentioned that the skills she learnt during the ALICT-LATIC programme enabled her to 'sell this idea to the ministry':

From what I did and learnt from the course, we came up with various courses that are currently running. (For example, we) came up with the Kenya Education Cloud, which is now under construction. (The course) gave me the handle to talk to and persuade various leaders to accept and take that programme...It was my idea that I generate with my boss...getting them to buy in the ideas that we come up with. (Participant Kenya)

Others also mentioned the significance of developing these persuasive or 'influential' skills:

It's more on the communication skills that is important. If you want to lead others, need to understand how to do it...To understand people, to understand what they need, understand their concerns and how to change people, how to influence people. (Participant, Mauritius)

As the main lead personal for technical and operations, I was able to influence the whole project...The motivation - how to motivate and influence people...I had 400 staff to motivate...I have been able to do that, thanks to reflection during the programme. (Participant, Mauritius)

More than one respondent highlighted the positive benefits they have been able to achieve as they have become more persuasive (making changes has been attributed to being more persuasive, to be able to market and put forward a compelling argument):

I am able to influence to my workmates to rally behind a course. I write very logical papers, concepts. I take them through (it). A number of times we have to argue for programmes to be taken up. I have been able to pass virtually all programmes proposed (my team) just by rallying my departmental heads to believe in what I have set up. (Participant, Kenya)

For example, in our unit recently there has been the idea that we should merge with the faculty. Most of the members were with the idea that we should be part of the faculty. After I did an expose, no one maintained that we should be in that faculty... In this university, there are written supervised exams... We have been able to get the university to approve three courses to use alternative modes of assessment. We have also been able to make a case (so that it is) no longer three times the fees of international compared to local students for online courses. These are small decisions which shape future of the university. (Participant, Mauritius)

Improved confidence

Several participants also reported that their confidence levels had improved (which also impacts on their level of persuasiveness to make changes) in their work:

At first, I used to speak in public but not so fluently. But the training enabled me to attend as many workshops as possible where I was able to present papers. (Participant, Zambia)

I have more confidence in my leadership level, which was reflected on the management of structure which I am responsible and the team that I lead...I am responsible for international cooperation. (Participant, Morocco)

One of the first contracts was to train 200 teachers. Those skills, talking to schools, organizing training, (and) leadership skills, have given me more confidence to run the business. (Participant, Zambia)

I think I am more confident. I fit into a number of discussions and committees in government (such as) the government of principal secretaries, permanent secretaries. I feel I belong. I contribute. I don't feel like my ideas were dumped down like before. I think I have got negotiation skills. I go to negotiate for government in bilateral discussions. (Participant, Kenya)

Agents of change

Some participants noted that since the course, they are now able to effect change, and specifically becoming more proactive, and embracing and encouraging change. For example:

...in my unit we are now more proactive. We have been able to bring in major changes such as process improvement and workflow automation...through discussion and sharing of ideas. We also very open to critical analysis and constructive criticisms between everyone. (Participant, Mauritius)

When you talk about creating agents of change, I think that has been a living example for me. My organization had a traditional approach to doing things...since I got this position, we have seen a lot of change. You can confirm from our clients including government. We've won different awards arising from the work we do, which is a sign of recognition, which is a sign that we have changed the way we do our business...Looking at innovation and embracing ICT ...main tools to change (the) way we conduct business, reducing (the) cost of business, enhancing effectiveness. We embraced a lot of innovative ideas. We have learnt to reward innovation to on order to encourage changes, and embrace changes that come in and those that need sustaining and improving are attended to appropriately We have learnt to recognize skills and not just (leadership). (Participant, Zambia)

Additionally, one participant noted that he tries to foster innovation and change within his team:

In terms of our practices, institutions will not allow (an) individual to make a mistake and in most cases, it is punishable. In my situation, to promote change, we have allowed people to make mistakes and be honest about it. Lessons learnt from such failed projects provide a stronger basis for more successful projects. That has created a release and (mistakes) are no longer a barrier. It is now a value. In the past, (mistakes/failure) stopped people to try new things, and they then suffer penalties...This creates a problem with truthful communication. Removing punishment as a way of promoting an equitable environment where people should be free to express themselves. (Participant, Zambia)

Improved relationships and interpersonal skills

Several participants reported improved relationships following the course, and this has enabled them to be more effective leaders:

The impact occurs at the quality of my work and my relationship with my staff, my hierarchy (top management) and with partners. (Participant, Morocco)

I have better interpersonal relationships and I can keep the team together based on a shared vision – everyone has responsibility so I can implement new vision – I can liberate myself from micromanagement level. (Participant, Mauritius)

For one respondent, the course has enabled him to delegate work:

I am more and more comfortable to delegate work – I learnt how to do delegation. I sharpened my skills. (Participant, Zambia)

For another participant, building trust with partners is very important in developing relationships:

in terms of responsibility as lead for different projects...how I am doing my work as a leader (is) different. For example, the way we are having consultation with other ministries – we learn a lot about building trust – and the way we are dealing with other ministries, it is helping a lot. Especially inter relationship with other ministries. It is completely different from what I used to do... Appreciate more the building trust with partners and other organizations. (Participant, Mauritius)

Writing skills

Respondents also appreciated learning research skills and developing their writing skills. For example:

...before this course I just had a first degree in engineering. I hadn't done any research or leadership training. Our last module had to do a little research and coming up with the paper. (Participant, Zambia)

...everything I do, we normally have to write a number of reports for some of the projects we do. Others are contracts, long term work, and we write reports (for these). The course helped with all the assignments we are doing, especially academic style writing. All that has helped in the work that we are doing now. (Participant, Zambia)

Management tools and skills

Participants reported increased use of management tools learnt during the programme e.g. Gantt charts for project management, and conducting trend analyses during planning. Further, participants noted an improvement in their general management skills, for example:

All the knowledge in this training has been transformed to managing – how to manage a national programme, how to manage a team. I have 11 trainers. I have development skills to manage people with me... I can manage my staff easily without any problem from them. (Participant, Morocco)

I am trying to be a leader and driving the company and driving growth. It has even helped influence to manage a new business that I started. I am able to manage two businesses at a time. I came from an engineering background – during the course we learnt how to manage people and manage projects and use ICT to become more efficient. I am able to manage a second business. (Participant, Zambia)

Improved collaboration

Participants also noted the benefits of collaboration which was introduced in the course:

...planning, issues of strategy, especially collaboration. I was able to ask friends to give me a different perspective of a number of issues, just to give another perspective. I am (now) more open and tolerant to other people ways of looking at things. (Participant, Kenya)

Due to skills gained during the programme, some participants reported initiated collaboration with other departments and colleagues to implement interventions. Examples of such collaborations are:

I also came up with an initiative - a radio programme on child rights - which I started on my own. I shared this with my bosses and I collaborated with others and they appreciated that idea. On my own, it was difficult to start something. But it was from this training that I gained that confidence. I am trying to see how best I can incorporate ICT in this programme. This is an idea I've come up with and people have appreciated. I've collaborated with so many people which was so difficult before the training. ALICT has opened up my mind. (Participant, Zambia)

I worked with other people from my class (such as) my colleague that was doing training in auditing. One of my classmates from ALICT class is a HOD at the University of Zambia. I am trying to work with him on my Phd. We came together to publish a paper. (Participant, Zambia)

We tend to collaborate with other institutions a bit more compared to before, because we understand that there is a whole community that needs to move forward. For example, we (myself and other colleagues, and currently I am heading this forum) have created one forum known as IPV6 forum. (Participant, Mauritius)

Upward work mobility

Due to their newly acquired skills some participants also reported that they are currently entrusted with more and higher level responsibilities and assignments at their places of work:

Previously I was only dealing with ICT and statistics. When you are talking in meetings, making contributions, that was the reason I moved. (Participant, Zambia)

The ALICT course is a major course in leadership. It turned up to be what mainly opened up my horizon in terms of leadership and working in a high decision-making position. (Participant, Zambia)

I learned a lot of that in ALICT such as what is a servant leader. I had these qualities and now these were enhanced by this course...A lot of people in the same cohort have moved two to three steps up – the ones I know in Kenya. (Participant, Kenya)

One respondent highlighted that he encourages his teams to study and develop themselves, and believes that this improves his organization:

(We have) a 15% of staff should be studying policy. This is supported by the organization...Times have changed and tools and requirements to do work has changed. I learnt to realise that when you give people such an opportunity, their efficiency increases, they give you quicker result. They have more concentration because don't want to get disturbed with their studies. The efficiency of the organization has gone up. When you go to school, you bring new ideas, able to adopt and adapt new ideas. This is growing the organization... The ability to continuously learn arises out of knowledge management and the like comes from knowledge society – that was part of the course. (Participant, Zambia)

Results (including impact on organizational and national level)

Participants were able to identify several innovations they have successfully implemented, which has had an impact at the organizational and national level. These include: e-learning training videos, a national identity card system, a national online candidate registration examination system, an employee monitoring system, national e-learning teacher training, introducing a national online technical and vocational training (TVET) programme, and national ICT management systems for schools.

Initiating reforms

Several participants have noted that they had initiated reforms in their organizations and departments:

I have actually initiated reforms in the department. This is a new department. I am the first principal secretary and I have organizational skills which I had before. Of course having a number of skills that are being enhanced through this course, I am able to do organization in the new department, I am able to influence fellow workers in setting up the department, able to get a budget, getting people through team building to believe in what we are doing... I am able to raise the profile of the department and attract other players in industry (such as) development partners and local industries in Kenya, trade union, association of manufacturers. This was even noticed by my own bosses. They made comments that this is good. (Participant, Kenya)

As highlighted earlier, a participant from Zambia completely reformed the way his organization operates:

The organization's image had gone down...but most innovations (we introduced since I started) have had high impact. We make clients do business more easily and (there is a) better image of government in the eyes of the people. When we speak in society, to government, NGO, civil society and donor community, they listen to us and support our agenda. We have managed, through appropriate prioritization to listen to the organization and provide a bit more support that was the case before, and from the way we approached our innovations, we have been able to receive support from aspects of society that matter... On a number of innovations, we have been able to introduce (them) because of the consultative approach – one section of society speaks to another section. Innovations we introduced ended up becoming a public enterprise.. we expanded our income base through innovations introduced, and have grown internal income from 15 million in 2013 to 64 million at the end of this quarter 2016. (Participant, Zambia)

Another participant from Kenya highlighted her increased ability to lead and drive innovations within her organization, highlighting how her ideas have been implemented and are now receiving attention at the presidential level:

One of the things I have been able to do is lead teams to come up with innovations and how to drive them. I managed to work on two innovations from what I learnt in that course, especially in changing where other people think and do things at the institute...I think so because the Kenya Education Cloud is not only changing the institutions, but also the way government is going to do other things...this innovation targets using a voucher system to deliver content to school – online and physical...a game changer in the institution and the country. (Participant, Kenya)

One respondent noted the impact of the course on his department, highlighting that his team launched an elearning platform at his university. Another noted that his team led the national ID card project successfully on time, and within budget. Yet another participant from Mauritius highlighted that he initiated changes at the institutional level:

I am more proactive and drive a lot of changes at the university level. We have been quite innovative for certain systems. There are certain instances at the university where I can present

the idea and discuss at the university level. Colleagues have been very cooperative in terms of accepting new systems. In some cases, we have faced (challenges) ... I proposed an identification number for all our certificates. If an employer (wants) to check authenticity of (a) certificate, they can do so online. We did not get much resistance. But we have to have concrete projects. We need to do our homework well. We propose things that help the university operate and help university be more efficient. (Participant, Mauritius)

Some respondents reported that they have contributed to the process of policy making, either because of the positions that they hold, or due to additional assigned responsibilities due to their participation in the ALICT-LATIC Programme.

After the training I was selected to supervise the e-education programme to work on research and education and so this is already benefiting me by opening up doors now and in future. This committee is working on the Vision 2030 for Morocco, introducing systematic ICT amongst all educational issues in the field. (Participant, Morocco)

Increasing innovation

Some participants reported greater innovations in how they approach their work. For example:

(I look at) innovative ways of doing things, not just how it has always been done. For example, having come from the TVET sector, I have been able to look at the curriculum, review the curriculum, able to reorganize the strategy of TVET in line (with) innovations in TVET and Kenya and elsewhere. (I looked at) working on modernising equipment, and how best to deliver instruction in TVET. Before people would say you can't do TVET online. Now I am putting up smart classrooms (and creating) online learning for TVET. At first people were resistant and said you can't learn much (through online learning). Having convinced them, we are now starting open TVET learning. (We are also) looking at the mobile phones as a possibility. I believe this is a possibility. (Participant, Kenya)

Developing and implementing policies and strategies

Participants attested to the skills developed during the course in assisting them in developing national policies and strategies:

I am a project manager in a national programme. I learnt a lot of things that are related to how to ...set up a national strategy (which I implemented). (Participant, Morocco)

The concepts apply to what we are doing right now I am involved in drafting (the) National ICT plan in Mauritius – this is definitely helping me. In the course we were taught how to examine the indicators – this is what I am using right now. (Participant, Mauritius)

I was involved in creation of (the) e-health strategy and the national health strategy ... (I was) able to implement things which I learnt and it's been very helpful ... leading change and being part of policies that are being formed. I contribute and ensure that the ideas are taken up in policy. Once policy is implemented, there is monitoring. (Participant, Zambia)

Colleagues working in the Ministry of ICT are in a better position to influence policy at the country level. For me, my influence is more at the institutional level – and eventually at times we are in committees at national level. For example, I was involved in drafting the national ICT policy ... we are regularly called upon when we are discussing policies of national interest – for example, policy on spam, and I was invited to participate in a conference on the use of ICT in preventing corruption at the national level. (Participant, Mauritius)

Before the course and ICT Directorate, ICT was done in an ad hoc way. The course has been able to change the approach, in terms of policy, in synergy with partners. At policy level, it has enabled the ministry to have a central policy focal point. There's now a one-stop shop for that. (Participant, Mauritius)

Review of organizational systems

A review of organizational systems appears to have occurred when the most senior official in the department was an ALICT-LATIC alumnus, or when more than one individual in the department had attended the ALICT-LATIC Programme. Nevertheless, as a precursor to change in the organization, several participants reported that they have generated and increased dialogue on innovations that could lead towards a knowledge society.

Recently, we have experienced decreased enrolment. We had to bring this to the attention of our director in terms of policies, that if we cling to, will bring down the institution. I've also told the people in research that I'm working with to pinpoint certain issues, and they quickly came up with the problems so as to figure out how to move forward. (Participant, Zambia)

Some respondents reported that they have succeeded in motivating their heads of department and other colleagues to conduct a review of the organizational actions to determine their relevance to the policy and strategies, and in one instance this led to a review of the policy.

We produce reports from our system that you enter manually. What we want to do is to be able to export information into that system/automation, so that systems are talking to each other. So that's being applied on the ICT side as well as on the policy front. (Participant, Zambia)

A few participants reported that they have used their new understanding of the innovation ecosystem to review workplace structures and processes, and propose changes to the workplace.

I would agree with that. I have learnt a lot about innovation ecosystem and the linkages. I think given the opportunity, it would be easy for me to have a better system put in place. At my position, I have already used it to show why our projects are not being used by the market etc. (Participant, Mauritius)

Increased application of online/ICT driven operations

Following the course, some participants successfully agitated for an increase in the use of ICT driven operations. This was realised in terms of organization-wide increased internet speeds and a shift to online communication. Participants reported that they had taken the initiative to utilise the internet for communication with other stakeholders, which is faster, more efficient, and more transparent; as well as to move from hard (paper) copy communication to soft (computer-based) copy communication.

There was also an increase in information dissemination. This is especially through online web portals where the volume of content has increased.

What happened in our environment was that we worked in silos. The ICT department in the government was separate, working in silos. Hence, we would spend so much money. Each and every ministry and province had their structure and could do their own thing and pay for their own internet to service providers. This course helped us understand that working in silos, you cannot achieve much. Just like it taught us to work together as a group. We thought of bringing all these structures together. We thought: What if we put our resources together, under the ministry of finance, and do one thing? For example, for internet, why not pay from a single source? We should pay as a unit so that the services can spread across government. When we did this, the cost of government internet went down. (Participant, Zambia)

Influence at a regional level

One respondent noted that her work was recognized at a regional level:

I already have a number of international organizations interested as development partners in what I am doing ... yesterday I was talking to (a) German ambassador, (the) World Bank, (the) African Development Bank, supporting TVET reform that has been neglected. I am the lead in the Northern Corridor Intergrated Projects (the northern side of east Africa – Ethiopia, Sudan, Uganda, Rwanda, Burundi and the northern part of Congo), MOE chair of the skills

development of human capital for this region – and I represent my minister – we are the lead in TVET in the region ... I attend meetings and rally up other leaders. (Participant, Kenya).

Engaging in community initiatives

A striking feature of many of the interviewed respondents was their commitment to community development:

I do a bit of external work not related to office work ... we are running a project that we want to for youth to apply skills such as creative thinking. We are working on it to come up with an online programme. Right now, we have a cultural programme to fight bad practices – and teams are looking to me how to steer this programme – ‘Adolescent empowerment programme’. (Participant, Kenya)

One of my colleagues from the training ... she and I are collaborating. We want to set up (from what we learnt) to do something with education and ICT in a peri urban area. We’ve had (two to three) meetings. We want to set up a learning centre, where we want to empower people to pass on ICT skills in the community. At this stage, we are looking (for) people to hire to do basic assessment. (Participant, Zambia)

On (a) community level, I am also the president of an NGO – I have a team where we deal with the educator community to help them transform education system from within. Started in 2012 – just after we finished the course or when doing the course. Helping our People – www.helpingourpeople.net. (We) mainly focus on teacher training and youth empowerment workshops – primary and secondary schooling level. (Participant, Mauritius)

Challenges

Participants reported facing several challenges in relation to implementing changes at the meso and macro level. Perhaps the most commonly cited challenge relates to dealing with bureaucracy.

Bureaucracy

In some instances, innovation is hampered by politics and bureaucracies in the work environment. Organizational structures are generally top-down which limits innovative space for subordinates and participants in non-decision-making roles. According to participants, due to bureaucracy, the processes preceding change are slow and, even with buy-in of the highest level, change is not guaranteed:

Procedural things in our structures. You can suggest/propose something to your immediate supervisor. Your supervisor will then take it to another supervisor and so on and so forth. By the time it reaches, the person who should get it may have transferred and there is now a new person. For you to implement something at a particular time, it becomes challenging. (Participant, Zambia)

When top management slow to take appropriate decisions at the right time... When political orientations change strategies. (Participant, Morocco)

Political barriers because at a certain level – politicians hold the veto they do. They want to have total control (and) this is where the problem lies. I think the course has not been designed to address the problem at that level. Sometimes CEOs are nominated by politicians...influence at the political level is critical. (Participant, Mauritius)

I am a project manager. Sometimes the decision is not in my hands, the decision comes from top management (such as) the minister, the government etc. (So) sometimes we are not getting what we want. We have different levels of understanding things. We are more near the reality than the top level. Sometimes (decisions are at the) political level, sometimes they are doing something that we don't want. So we can't even discuss it. (Participant, Morocco)

One participant highlighted that addressing change management was hard work and required much thought and effort:

Change management...before you can have idea accepted, you have to do a lot of work. The kind of challenge I've had is that some of the seniors/supervisors have not bought into the idea of some of the things I want to do and therefore this has been a hindrance to take it forward. Even now the main management has people who do not share in my vision. From the skills I learnt from the course (persuasion skills), I still delivered what I wanted (Participant, Kenya)

Thus, while bureaucracy meant the end of the road for some, others could apply the skills they learnt to address this. For example:

Even at national, you still find people that will not share in your vision – that has also been a hindrance. Then you hit a block when they don't share in your vision. As you are advancing your ideas and innovation – the leadership tells you what you are trying to do is in someone else's docket. Those are some kind of things to negotiate. (For example), we came up with online programme, and we wanted to host it. One of the ministers said that they were going to host it. (Participant, Kenya)

In this instance, the participant noted that she anticipated that another ministry would want to host their online programme and her team thus placed the programme online prior to the meeting so that they could demonstrate success – she thus used 'futures thinking' skills to anticipate potential barriers to adoption and ensured that her department could continue with the proposed programme.

Changing mindsets and achieving buy-in at the highest level of leadership

Most respondents recognized that decisions resulting in change are ultimately made by the highest level of leadership in the organization. The further away they were from decision-making positions, the less likely they were to catalyse or achieve organizational change. In some instances, their influence is limited to the department within which they work.

I've always had to face this kind of situation. Change is a very sensitive issue. People in higher levels rarely want to be dictated to on how to do things. So, it's easier to try to change things at your level and below. But above you, it's more of a challenge. For example, if I looked at the structure of the organization and it is not appropriate and needs to be restructured, it won't happen. (Participant, Mauritius)

Higher level decision makers do not have contact with people like us. They have the tendency of monopolising debate – vice and pro vice chancellors and political nominees. It is a problem of mindset – they don't want to change their ideas, ways of thinking. (Participant, Mauritius)

It was a challenge to bring in a change because I was the only one who had that knowledge from ALICT. (Participant, Kenya)

Participants also highlighted the need for constant negotiation in order to achieve buy-in for their proposed projects. For example:

In my department, there's not (many) barriers. Myself and my team are fully in control of what we are trying to achieve. At (university level), there may be difficulties at times because of the heavy hierarchical structure that (is resistant) to change. For example, recently I am trying to create a welfare fund for my unit. I am getting a lot of resistance because it's the first time someone is putting money aside to build capacity ... it has never been done at the university. (Participant, Mauritius)

One respondent, who did have an influential position at the national level highlighted that it was equally important to achieve buy-in from all stakeholders when rolling out national level projects:

How do I ensure that what is planned is implemented across the country (addressing) access and equity of services. These are some of challenges when working at the national level to ensure that work is done at the devolved unit as not all (people) buy in. (Participant, Kenya)

Related to this was a need for accurate information and communication when projects are implemented:

When I went down to the ground, when there was resistance. There is a real lack of information. They need sensitization with right attitude and approach, so we can implement projects faster. There was a lack of information and negative information on social media. People who believe in the project need to sensitize people on the programme so that we can speed up implementation. (There is a need for) communication, (as there is) limited communication and miscommunication to people. (Participant, Kenya)

Lack of required resources

Participants also highlighted the lack of available resources to implement desired changes. These include both human and financial resources which are a challenge in most organizations. Lack of financial resources greatly affects the extent to which innovations can be implemented, for example, introduction of ICT programmes in education institutions is greatly hampered by the shortage of computers. At the national level, success of projects depends on whether the ministry of finance approves funding. Where resources are available, this has been listed as the main facilitator of observed change.

We were given all the innovative space that we could be given. The Ministry of Education had a dedicated ICT Directorate for education. This was an important implementation aspect. The problem is then you need to have the right project to enable the expansion. Policy drive has been there but funding is the issue. We have been given the proceeds to get the platforms.

However, this has to be accompanied by the relevant HR (human resources) support, technology, connectivity - which is in secondary schools but needs to be expanded in high schools. (Participant, Mauritius)

It's also a matter of resources and priorities of government. Just like the university, we have a lot of ideas, but we have constraints in terms of resources – can be financial or technical skills. Even at the national level, we don't have unlimited funds. Some projects have more priority. (Participant, Mauritius)

Lack of innovation

Another reported challenge was the lack of an environment which rewards innovation:

Business as usual – tendency for innovation and doing things differently is not so prevalent – of course in other sectors, bureaucracy in getting new ideas across. If you work and you are persistent, can get what you want – as long as you know the end from the beginning. (Participant, Zambia)

Improving the course

Participants also provided various suggestions as to how to improve the course.

Course content

Regarding course content, three suggestions were made: Firstly, to update content so that it is more relevant:

I think the course needs to (be) regularly revamped to include new elements (given that we have) changing technology and changing educational landscape ... For the time being (there are) quite a lot of changes in the environment. Keep the course up to date. Generally, for any curriculum, you need to revamp it at regular intervals ... For example, we were talking about MDG (at the time of the course), (we are) now talking about sustainable development goals (SDGs). (Participant, Mauritius)

The second suggestion was to reduce the theoretical content in the course, but retain the practical elements:

Especially everything related to theory – but for practical activities, it was good. Everything related to theory – to make it more light and practical for users. (Participant, Morocco)

The content was more than adequate to me. I don't see anything missing. If anything, from my other colleagues (they said that there was) too much content. There were a lot of reference which some people never even read. (Participant, Zambia)

The third suggestion was to increase the practical components of the course:

The course (can) take step further and try to engage directly with (the) stakeholder. Embed the ALICT course in day-to-day running of institutions. A project could have been started in-country with one of the ministries (education, technology, science and technology) that would allow students to work with the project to implement what we learnt across ministries. (Participant, Zambia)

Give a bit of time in trying to do what you have learnt within a course. Projects that you can practice what you have learnt was not adequately done. Not at the end, but along the way. (Participant, Kenya)

The course lacked a practical element to put into practice what we learnt across six months or one year. Treat it like a Masters degree (so that we) go back into institutions and practice... But I think a programme at this level needs to have a practical element, and that is only via a Masters level approach where each candidate is given six months – implement changes that you are learning and come back with feedback – forcing students to do that would have more impact – we did exercises of (that)nature but not to the level where we had to demonstrate that made changes in organization – has to be some demonstration of what impact training had on organizations we are working in. (Participant, Zambia)

Name of the course

One participant highlighted that the course is more a leadership and innovations course than an ICT course, and the focus should thus be on innovation as opposed to ICT:

The name is ALICT. I don't see much consistency between the name and what the course consistently does. I love to see how the ICT aspect gets pronounced. It sounds like innovation should mainly be ICT based. You largely find that innovation may rely on ICT, but there are more of governance, social or economic innovations using ICT as a tool. The naming of the course affects the extent to which it is recognised and accepted by political dispensation especially in my country...The name (should be) more on leadership and innovation course. (Participant, Zambia)

The same participant questioned why the title of the course needs to include 'African':

People don't want to be confined to a continent for leadership. You're an African (leader), not a European leader. ...meanwhile (the course) is to be a leader. You learn to be a change leader, change agent. The name doesn't reflect what the course is about. (So) find an appropriate name, (rather than) confining this leadership to Africa. Leadership is leadership. If I go to the US, how do I go and say I have a course in African ICT? (Participant, Zambia)

Provide an opportunity to implement ideas that were generated

Participants noted that they would have appreciated more opportunities for research, and opportunities to implement the ideas that were generated:

Towards end we had three groups and we made roadmaps. We submitted each of the components and we came up with our theme for our roadmap. Beyond that we haven't really done anything. What we collected as different groups was really rich...out of that we could see what we as a team could work towards and push for and have an impact at a national level. I think it's the completion. We could actually start calling each other and make a group online (to continue). Because I think we did a lot (and had) brilliant ideas. (Participant, Zambia)

One respondent noted that while it was beneficial to learn about strategy and policy, there is also a need to focus on the implementation aspect on the ground:

We need to really teach people how to formulate policy and the value chain all the way to implementation – how to implement programmes on the ground... Teach how to translate what you have (been) taught into producing something out to get the real product that you have conceptualised. When you put (your project) on the ground, you can get a totally different result that you are not expecting...how best can we implement what we have conceptualised? (Participant, Kenya)

Focus on creating partnerships as agents of change

One respondent highlighted the need to focus on being effective agents of change working within bureaucracies:

While we want to be agents of change and have worked to try and be so, society at large are still living in the past and therefore we find a situation that the environment becomes a deterrent to the extent that we can introduce and be agents of change. The-course needed to embrace a bit more how to manage political influence on decision-making and change. What seems to lack now is the side of creating partnerships and relationship which help/facilitate the extent to be change agents

How to create positive partnership

How to create relationships with structures that matter – creating support around the change that we introduce

In my country, we have extremely rural areas. (There can be) change in urbanised setting, but not in rural settings (if they) contravene traditional beliefs and societies. Change should be all embracing – urbanised, well developed and underdeveloped communities. (Participant, Kenya)

Focus on reaching the marginalised (alternatives to the norm)

Another suggestion was to focus on alternatives to the norm in implementation:

More leadership, especially in terms of disadvantaged, marginalised or hard reach populations – at times some populations (are) left behind, and to equalise them is very difficult. We still have to see how do we address hard to reach marginalised communities – still have to forecast analyse it. It is easy to implement programmes ... when it comes to hard to reach places (Nairobi is cosmopolitan but there are pockets of poverty). ALICT can focus on alternatives to the norms (or) pockets that are not the normal. (Participant, Kenya)

Length of course

As highlighted earlier, the allocated time for the course was insufficient. Thus, one suggestion was to reduce the 'length' of the course, as participants felt that 16-20 hours per week was too demanding.

The content was very important. But we did not have time to learn and read everything. If we extend the time it will be pretty good. (Participant, Morocco)

There (are) a lot of documents, activities, as we were working (all day). Sometimes we have to work at night to achieve activities ... To make it better – make it more light and shorter. (Participant, Morocco)

A possible solution that was offered is to run the course, with the same content, over a period of a year, thereby spreading out the workload.

One participants reported that the pace of the course was too fast:

Practical sessions were sometimes ambiguous and difficult to understand. For example: participants were asked to elaborate a policy that had multiple steps. About expectations and coming up with scenarios, the first two steps were not very clear and yet the course immediately moved onto the third issue before I could grasp the first two and understand. The course should have allowed more time for the first two steps even if I eventually caught up. (Participant Morocco)

Participants

Regarding course participants, one suggestion was to target decision makers within a country to achieve maximum impact:

It does target ministries. Other senior government officials would probably benefit. I think it was mid-level managers. Those are the decision makers. (Participant, Zambia)

Focus on senior management positions. In the first cohorts, middle manager, but in the subsequent cohorts the focus on operational level manager. I don't think (the course is appropriate) on this level. It can result in more frustration when they know what needs to be done (but do not have decision-making power). (Participant, Mauritius)

However, it was also pointed out that decision makers work at higher positions and therefore face greater time constraints and may therefore not be available to participate in the course.

Those of high level positions have challenges with time due to lots of responsibilities. I do not have an exact solution of how this can be resolved, except of getting their buy-in from the beginning. Maybe a face-to-face session to explain the importance of their involvement from the beginning of the course. (Participant, Mauritius)

Other suggestions were to create 'specialised streams' within the course so that it can target different participants at the political, operational, and management level.

Another suggestion is to broaden participation and not to confine participants to Africa:

To spice it up in a globalised nature, get other students from other parts of the world to help broaden up understanding of issues. (Participant, Kenya)

Create greater networking opportunities

Although the alumni network aims to connect past participants, participants felt that there was a need to create greater networking opportunities:

I was thinking that there should be some kind of follow-up in terms of reconnecting the cohorts that graduated and trying to look again at new knowledge that we need to know. (It could be) a face-to-face and online discussion ... given that a number of them have moved up to new positions mainly from this course. (Participant, Kenya)

Most interviewed participants noted that they have not participated in the ALICT-LATIC Alumni network. Some are not aware of the network:

I do not know how to get in contact with other network members (Participant, Morocco)

Others noted that they are aware of the network but due to time constraints and work commitments they have not participated in the network:

I joined and have gone there (two or three) times. I need to make time. It depends on time. I haven't made the time. (Participant, Zambia)

Currently, the format of the network is in a LinkedIn chat, which required users to log in to view chat messages. Those who have participated in the network note that they are not active participants:

Yes, but not too actively – at times I respond to the post which is on the LinkedIn group – I also registered on the group created for the alumni. If there is a post which I would like to respond to, (I do). (Participant, Mauritius)

It was suggested that the format of the ALICT-LATIC Alumni Network be changed:

If it can be in format where it prompts people to move and contribute – now I have to log on(to the) platform. If there are issues (it is), nice to receive an email that there is this from the alumni.... something maybe pops up on my email – then it may be easy to (participate)...now I have to log in. (Participant, Zambia)

What people are saying is that it is not the appropriate platform. We need to have a network which uses the latest of technology. I am totally for the network...but it cannot be left to the participants. We need a structure otherwise it is not going to work. Give structure to the network. I don't know who will do it. (Participant, Mauritius)

Two participants from Zambia felt that the focus should also be on networking within countries:

I thought that alumni could do a bit more. The course should identify a country or have in-country coordinators ... still maintain country coordinators to be focal points ... country coordinators can identify a project which is knowledge based and use members of alumni to see how they can help with project implementation – that would make the alumni more active. How do we get 300 plus people to enhance knowledge economy across the continent – we should have gone a step further with county coordinators, identify a knowledge economy project in (the) country, come up with a proposal. ALICT could back the funding proposals – to take countries in the knowledge economy. (Participant, Zambia)

I was thinking is it possible to increase the amount of face-to-face (networking). I am in Zambia and there are other students in Zambia. We can arrange qualified lecturers in Zambia to deliver a lecture on one or two topics ... use expertise to write proposals ... needs a bit more thought in terms of how it is organized on a country level and identifying projects (Participant, Zambia)

Conclusion and Recommendations

Overall, participants responded very positively to the ALICT-LATIC course, noting that the course had achieved its objectives in terms of developing appreciation of key elements of knowledge societies and building their capacities to be agents of change in their fields. In general, most participants reported evidence of achieving change at the micro and meso level (personal and organizational level), whilst those who have more decision-making power or who are in top positions have been better able to achieve change and create an impact at the macro level (national and regional levels).

At a personal level, the ALICT-LATIC course has had profound and demonstrated impacts and effects on participants' attitudes, knowledge, skills, and behaviour, changing participants' understandings, outlooks and general ways of working. The main changes were triggered by self-awareness of their leadership practices and the various tools introduced in the course (for example, the 360-degree tool and futures thinking). It has impacted on their relationships with others, creating new ways of working, collaborative group work, information sharing, and enhanced leadership and management. Although, for some, the course took place four years ago, they were still able to clearly pinpoint and articulate elements of the course which impacted on them. Participants could cite how they are using specific components of the course daily, highlighting its usefulness. This positive impact is also seen in participants developing and moving forward in their careers.

While some participants felt that the course contained too much theory, the content of the programme was highly regarded in that they learnt from the concepts and tools and could apply them in their personal lives. Depending on their prior knowledge, however, participants identified different aspects of the course that they found most useful (in terms of theory). Participants mentioned that the following elements of the course were valuable, and these should therefore be retained:

- The content on ICT, KS, Education, and STI should be retained (recognizing that some may read all the course materials while others may skim through them).
- Using a blended learning approach was well received and this approach should continue in future training. Participants also benefitted from the team work and collaboration required from the course, and thus, this element of the course should be also be retained.
- The impact of leadership tools, in particular the 360-degree review, the leadership journal and the personal development plan was well received, and this element of the course should therefore be retained. Participants also specifically noted the value of self-reflection, scenario building and the futures tool as particularly beneficial, having an impact at the personal, organizational and national level, and these tools should also be included in future courses.

The following recommendations may help to increase impact on the micro level:

- It may be useful to review course content and course delivery formats to ensure that the latest information and the most efficient delivery approaches are adopted. This may include increasing the practical elements in the course, and considering new technologies which allow for synchronous chats when planning future courses.
- Related to the above point, it may be useful to focus on increasing participation in discussions to ensure that all participants make meaningful contributions. This might include using a discussion moderator to prompt participants to explain what they mean, or to probe more when participants just agree with a particular point of view.
- The programme may have more impact on a personal level if consideration is given to the time required to engage with the course and indicative times required to complete the activities are presented to students. Increased time will allow participants the opportunity to engage more with the theoretical aspects of the course. It is thus recommended that the duration of the course be extended so that it runs over a year. A longer timeframe may enhance participation in the course and help to ensure a work-life balance for participants and trainers.

The impact on the organizational level has also been positive. As noted, the ease with which change has been possible depends on the level of power and the position participants hold within their organizations and departments. However, those in less powerful positions have made great strides and achieve change using the tools and skills gathered from the course (such as planning and persuasion) to create buy in and achieve wider change. Given this, the following recommendations are made to increase impact on the meso level:

- Ensure a mix of participants within organizations so that there are at least two participants per organization, with one person being in a higher position with decision-making power and another being a middle manager. This may help to address the challenge of bureaucracy facing many participants in achieving changes within their organizations.
- Another way of addressing the challenge of working in within organizational structures that are top-down, limiting an innovative space for those in non-decision making positions, is to include modules that focus on how to influence change in such environments. For example, there may be increased focus on negotiation and persuasion skills in tackling this challenge.
- Provide participants with the opportunity to implement ideas that were generated in the course and practise what they have learnt in theory at their institutions/organizations. One way of doing might be to include a practical element of the course which requires participants to implement changes within their organization around the areas that they are learning about. This could increase the impact of the programme and help to identify where there are bottlenecks or challenges, which can inform design of future programmes.

The impact of the course is also visible at the national and regional levels. Several participants have instituted and implemented nation-wide projects including implementation of national examination systems, national identity card systems, elearning programmes and national TVET programmes. Almost all the initiatives have been implemented successfully – and participants attribute much of this to the skills learnt during the course (for example, skills related to planning, creating a vision, futures thinking and fostering team work). The impact at this broader level is also evidenced by numerous participants who are involved in community activities outside of work – and in most instances these activities are also centred around building knowledge societies. Nevertheless, the following recommendations are made to increase impact at the macro level:

- As per the recommendations to increase impact at the meso level, it may be useful to choose at least two participants per department, as teamwork can also enhance adoption. On the one hand, those at higher levels have more agency (in terms of bureaucratic procedures) than those at lower levels to effect change. On the other, those at higher levels generally have less time available to juggle their work and personal commitments. It is therefore suggested that participants with decision-making authority are included in the courses to make it easier to effect change. Thus, the course should continue to target those in higher level policy decision-making positions. This will help to expedite the development of relevant policy and create a conducive environment for innovation and the creation of Knowledge Societies. Simultaneously, the course should target those in management positions to create leaders who may in future have decision-making positions. There may thus be merit in considering different ‘streams’ targeting different role players.
- Focus on implementation and how to see a project through from inception until completion. Thus, the focus should remain on policy aspects and conceptualising projects, but there should also be increased focus on how implement policies and ideas on the ground. It may also be significant to focus on looking at ‘alternatives to the norm’ when implementing policies and projects and how to address challenges in implementation. There may be merit in including modules that focus on implementation at all levels of society, and focus on how to manage political influence on decision-making and change.

- Related to the above, it is recommended that the course also focus on how to achieve buy-in from all stakeholders including people on the ground. An example of this could be the use of social networking tools to develop more inclusive approaches.
- Place more attention on fostering and building partnerships within and between organizations and 'creating relationships with structures that matter'. Such an emphasis may also include identifying who these partners would be and how to build these relationships.
- Foster enhanced networking opportunities, particularly between alumni. Increased focus could be placed on fostering networking after the course, either within countries or across countries, or both. This might include organizing events /lectures once or twice a year to keep participants up to date with latest developments. Such efforts can also include strategizing about the most effective way of building an effective ALICT-LATIC Alumni network.
- There is also a need to focus on the method of networking (mode) making it easy to network within and between countries. It may be useful to appoint a GESCI member to drive the project. It may also be useful to run specific projects through the network.
- Consider partnering with relevant funding bodies to assist participants in taking proposals developed during the course forward, should they hold merit. The implementation of such proposals may enable quicker development of knowledge societies.

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Appendix A: ALICT-LATIC Participants

Table 5 Distribution of ALICT-LATIC alumni by country and cohort

Country	Cohort 1	Cohort 2	Cohort 3	Cohort 4	Total	Percentage (%)
Kenya	25	21	27	0	73	15.0
Mauritius	21	0	25	0	46	9.4
Uganda	0	17	23	0	40	8.2
Rwanda	0	15	21	0	36	7.4
Malawi	0	20	15	0	35	7.2
Tanzania	14	0	21	0	35	7.2
Zambia	16	0	15	0	31	6.4
Botswana	0	15	15	0	30	6.2
Morocco	0	0	0	23	23	4.7
Namibia	0	18	4	0	22	4.5
Senegal	0	0	0	20	20	4.1
Ethiopia	0	7	12	0	19	3.9
Ghana	0	0	17	0	17	3.5
South Africa	7	0	9	0	16	3.3
Mozambique	0	5	9	0	14	2.9
Cote d'ivoire	0	0	0	8	8	1.6
AUC	0	11	9	0	20	4.1
Others	0	1	1	0	2	0.4
Total	83	130	223	51	487	100.0

Appendix B: Online Survey Questionnaire

SURVEY QUESTIONNAIRE (content only to be uploaded in online format)

Module A: Respondent Information

Module B: General questions about the training

Module C: Participant Leadership behaviour

Module D: Organizational Change

MODULE A: RESPONDENT INFORMATION	
Please state your:	
A1. Country of work	
A2. Gender	Male, Female
A3. Highest level of education attained	PhD, Masters degree, Bachelors degree, Diploma
A4. Age (in years)	
A5. ALICT-LATIC course graduation year	2011, 2012, 2013, 2014, 2015
A6. Sector of Employment	<ul style="list-style-type: none"> • Government <ul style="list-style-type: none"> ○ Education sector ○ Science Technology and innovation sector ○ ICT sector ○ Finance sector ○ Planning and Development sector ○ Other (<i>Specify</i>) • Academia • Civil Society • Private Sector • African Union Commission
A7. Number of years of work experience	

MODULE B: GENERAL QUESTIONS ABOUT THE TRAINING					
The following questions are aimed at providing an overall understanding of your reaction to the training. Please rate the extent to which you agree or disagree with the follow statements about the ALICT-LATIC training course					
Statement	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree
B1. The training content was relevant to my work					
B2. The training time was appropriately balanced between online learning, offline learning and face to face learning workshops					
B3. The time was sufficiently balanced between theory and practical sessions					
B4. The moderated online forums enabled engagement among participants					
B5. The tutors provided feedback that was useful					
B6. The tutors provided feedback in a timely manner					
B7. The training increased my ability to articulate the linkage between research, innovation, science and technology, education and ICT for development					
B8. The training increased my ability to transform policy frameworks into operational models					

B9. The training increased my ability for decision making					
B10. The ALICT-LATIC programme has provided a supportive environment for capacity building for decision making that does not necessarily reflect the past ways of doing things					
B11. The training increased my ability to innovate and ensure increased productivity and creativity					

MODULE C: PARTICIPANT LEADERSHIP BEHAVIOR

Since graduating from the ALICT-LATIC programme, please rate the extent to which you agree with the follow statements about your skills, management and leadership style before and after the training on a scale of 0 to 5 with 0 representing no agreement and 5 representing strongest agreement.

Statement	No Agreement 0	1	2	3	4	Strongest Agreement 5
C1. Before the training, I behaved in a way that was consistent with organization ideals and values						
C2. I am open and authentic about what matters to me—without advertising myself.						
C3. I demonstrate courage as a decision maker						
C4. Before the training, I studied the products and activities of other organizations to get ideas						
C5. I see through messes and contradictions to a future that others cannot yet see. I am clear about what we are making but flexible about how it gets made.						
C6. Before the training, I described a clear, appealing vision of what the organization could accomplish or become						
C7. Before the training, I talked about the importance of mutual trust						
C8. I propose new and creative ideas for improving organizational services and processes						
C9. I explain what must be done to get rewards						
C10. I see things from nature's point of view; to understand, respect, and learn from the clarity and patterns of the natural world.						
C11. Before the training, I had the ability to organise and manage projects						
C12. I nurture and grow shared assets that can benefit all players and allow competition at a higher level.						
C13. Before the training, I planned in detail how to accomplish tasks or projects						

MODULE C: PARTICIPANT LEADERSHIP BEHAVIOR

Since graduating from the ALICT-LATIC programme, please rate the extent to which you agree with the follow statements about your skills, management and leadership style before and after the training on a scale of 0 to 5 with 0 representing no agreement and 5 representing strongest agreement.

Statement	No Agreement 0	1	2	3	4	Strongest Agreement 5
C14. I determine what resources are needed						
C15. I behave in a way that is consistent with organization ideals and values						
C16. Before the training, I made personal sacrifices that went beyond self-interest for the benefit of the organization						
C17. Before the training, I questioned traditional assumptions and beliefs about the best way of doing things						
C18. Before the training, I experimented with new ideas						
C19. I immerse myself in familiar and unfamiliar environments, to learn from them in a first person way						
C20. Before the training, I saw things from nature's point of view; to understand, respect, and learnt from the clarity and patterns of the natural world.						
C21. Before the training, I worked together in partnership with leaders in other organizations						
C22. Before the training, I had the ability to confront individuals with different expectations						
C23. Before the training, I was open and authentic about what mattered to me—without advertising myself.						
C24. I have the ability to create development strategies						
C25. I reward effective performance and contributions						
C26. Before the training, I provided clear explanation of roles & responsibilities						
C27. Before the training, I saw through messes and contradictions to a future that others could not yet see. I was clear about what we were making but flexible about how it got made.						
C28. Before the training, I exploited my inner drive to build and grow things in their						

MODULE C: PARTICIPANT LEADERSHIP BEHAVIOR

Since graduating from the ALICT-LATIC programme, please rate the extent to which you agree with the follow statements about your skills, management and leadership style before and after the training on a scale of 0 to 5 with 0 representing no agreement and 5 representing strongest agreement.

Statement	No Agreement 0	1	2	3	4	Strongest Agreement 5
organization, as well as connect with others in the making						
C29. I reward effective performance and contributions						
C30. I participate in networks for improving organizational and sector learning						
C31. Before the training, I immersed myself in familiar and unfamiliar environments, to learn from them in a first person way						
C32. I describe a clear, appealing vision of what the organization can accomplish or become						
C33. Before the training, I nurtured and grew shared assets that could benefit all players and allowed competition at a higher level.						
C34. I check work progress against plans to see if it is on target						
C35. I consult to get reactions and suggestions before making a decision						
C36. Before the training, I consulted to get reactions and suggestions before making a decision						
C37. Before the training, I described exciting new opportunities for the organization						
C38. Before the training, I requested reports on progress						
C39. Before the training, I checked work progress against plans to see if it was on target						
C40. I work together in partnership with leaders in other organizations						
C41. I know how to manage by objectives (MBO)						

MODULE C: PARTICIPANT LEADERSHIP BEHAVIOR

Since graduating from the ALICT-LATIC programme, please rate the extent to which you agree with the follow statements about your skills, management and leadership style before and after the training on a scale of 0 to 5 with 0 representing no agreement and 5 representing strongest agreement.

Statement	No Agreement 0	1	2	3	4	Strongest Agreement 5
C42. Before the training, I turned a dilemma or chaotic situation—which unlike problems, cannot be solved—into advantages and opportunities						
C43. I have the ability to understand persons with different backgrounds						
C44. Before the training, I had the ability to create development strategies						
C45. I request reports on progress						
C46. I question traditional assumptions and beliefs about the best way of doing things						
C47. I determine how to organize and co-ordinate work activities to avoid delays, duplication of effort and wasted resources						
C48. I promote system-wide dialogue for engagement in inter-organizational collaborative activities						
C49. I talk about the importance of mutual trust						
C50. I encourage teams to look at problems from different perspectives						
C51. Before the training, I knew how to handle personal issues						
C52. I exploit my inner drive to build and grow things in their organization, as well as connect with others in the making						
C53. I calm tense situations where differences dominate and communication has broken down—bringing people from divergent cultures toward positive engagement.						
C54. I have the ability to organise and manage projects						
C55. Before the training, I demonstrated courage as a decision maker						
C56. Before the training, I promoted system-wide dialogue for engagement in inter-organizational collaborative activities						
C57. Before the training, I explained what must be done to get rewards						
C58. I provide a clear explanation of roles & responsibilities						

MODULE C: PARTICIPANT LEADERSHIP BEHAVIOR

Since graduating from the ALICT-LATIC programme, please rate the extent to which you agree with the follow statements about your skills, management and leadership style before and after the training on a scale of 0 to 5 with 0 representing no agreement and 5 representing strongest agreement.

Statement	No Agreement 0	1	2	3	4	Strongest Agreement 5
C59. Before the training, I created, engaged with, and nurtured purposeful social change networks through an intelligent use of electronic media and in-person communication.						
C60. I experiment with new ideas						
C61. I have the ability to confront individuals with different expectations						
C62. Before the training, I created quick and early versions of innovations, with the expectation that later success would require early failures.						
C63. Before the training, I participated in networks for improving organizational and sector learning						
C64. Before the training, I contributed to building a culture of trust and collaboration between organizations in the sector						
C65. I know how to handle personal issues						
C66. I describe exciting new opportunities for the organization						
C67. Before the training, I determined what resources were needed						
C68. Before the training, I determined how to organize and co-ordinate work activities to avoid delays, duplication of effort and wasted resources						
C69. I create quick and early versions of innovations, with the expectation that later success will require early failures.						
C70. I create, engage with, and nurture purposeful social change networks through an intelligent use of electronic media and in-person communication.						
C71. Before the training, I encouraged teams to look at problems from different perspectives						

MODULE C: PARTICIPANT LEADERSHIP BEHAVIOR

Since graduating from the ALICT-LATIC programme, please rate the extent to which you agree with the follow statements about your skills, management and leadership style before and after the training on a scale of 0 to 5 with 0 representing no agreement and 5 representing strongest agreement.

Statement	No Agreement 0	1	2	3	4	Strongest Agreement 5
C72. Before the training, I calmed tense situations where differences dominated and communication had broken down—bringing people from divergent cultures toward positive engagement.						
C73. Before the training, I had the ability to understand persons with different backgrounds						
C74. I study the products and activities of other organizations to get ideas						
C75. Before the training, I proposed new and creative ideas for improving organizational services and processes						
C76. Before the training, I knew how to manage by objectives (MBO)						
C77. I contribute to building a culture of trust and collaboration between organizations in the sector						
C78. I plan in detail how to accomplish tasks or projects						
C79. I turn a dilemma or chaotic situation — which unlike problems, cannot be solved—into advantages and opportunities						
C80. I make personal sacrifices that go beyond self-interest for the benefit of the organization						

MODULE D: ORGANIZATIONAL CHANGE

This module is aimed at determining the impact on the organization (workplace, communities, networks, sectors or at national level) following the training

D1. What capacity development initiatives have been introduced in your organization towards knowledge society development, as a result of your training on Leadership in ICT and Knowledge Society?

D2. What policies, systems or processes have been introduced into your organization to facilitate innovations for knowledge society development, as a result of your training on Leadership in ICT and Knowledge Society?

D3. What technological and infrastructure initiatives have been introduced into your organization to support knowledge society development, as a result of your training on Leadership in ICT and Knowledge Society?

Appendix C: Key Informant Interview Guide-Country Case Studies

INTERVIEW GUIDE FOR COUNTRY CASE STUDIES

INDIVIDUAL KEY INFORMANT / FOCUS GROUP INTERVIEWS / ROUND TABLE MEETINGS

2nd May 2016

Introduction

Consultant should introduce him/herself to the individual participant/s or group.

Thank them for their collaboration and for offering of their time for the interviews on short notice. Inform the interviewee/s about the confidentiality of their participation and the privacy of their views and opinions. Seek informed consent for use of any quotations or direct information for the impact study report in advance. Clarify that their names will be included in a list in the Appendix as one of the informants, however will not be associated to any views unless with prior permission.

Inform participants of how much time (1-2 hours that this interview will take. Explain how it is organized by the levels of information shown below. Thank participant and begin the interview. (Remember to keep time and seek permission if you extend the time)

INTERVIEW GUIDE (*Note: this is only a guide- not to be shared directly with key informants. The consultant will ask the questions and expound on them to ensure the participant/s understand. Probes are frontloaded under Level 1 on the guide to jostle the memories of alumni and to offer a basis for responding to more general questions with consideration without being repetitive and therefore avoid interviewee fatigue and increase efficiency*)

Level 1: Reaction to the training

1. What factors motivated you to register for this course?
2. In what ways was the training relevant to your work at the time?
3. To what extent did the teaching/learning approach influence your learning during the training?

Probes:

- *Balance between online learning, offline learning and face to face learning*
 - *Balance between theory sessions and practical sessions*
 - *Relevance of practical sessions to your work*
 - *Moderated online forums*
 - *Tutor feedback*
4. What do you feel were the greatest strengths of the training?
 5. What do you feel were some of the gaps or weaknesses of the training?

PROBES: for each of the Level 1 questions probes may include:

- *Development of leadership capacity for understanding the innovation eco-system and its linkages between research, innovation, science & technology, education and ICT for development; visionary culture, innovative approach.*

- *Developing the ability of organizational leaders to transform policy frameworks into operational models; educating leaders to recognize ICT as dynamic with potential to contribute change Capacity building of leaders' e-government delivery models themes, increasing portfolio of e-government services, building monitoring and Study capacity of leaders to track and measure progress.*
- *Supporting individual leaders and facilitate capacity building for decision making that does not necessarily reflect the past ways of doing things; giving leaders room to innovate through support and facilitation to ensure increased productivity and creativity) building on research and development, harnessing new ways of doing things bringing services closer to the people using ICT)getting training institutions to collaborate on capacity building to build future leaders.*

Level 2: Learning Outcomes and Impacts AND Transfer of Learning

6. What was/were your main learning / skill/s obtained from the training?

Probes

- *Understanding of the innovation eco-system and its linkages between research, innovation, science & technology, education and ICT for development;*
- *Ability to transform policy frameworks into operational models;*
- *Decision making that does not necessarily reflect the past ways of doing things*
- *Ability innovate and ensure increased productivity and creativity*

7. To what extent did your attitude towards leadership in ICT change following the training?

8. How has the training offered by the ALICT programme been transferred in your workplace?

- *Probe: self-awareness, self-confidence, positive communication, encouraging learning culture, sharing of success and best practice, transparency, increased collaboration etc.*

Level 3: Behavior Change and Communication

9. After you finished the course, what changes were you able to propose and implement at your workplace?

- *Probe: Were you able to sustain this change?*

10. What factors facilitated your proposed changes to be implemented at your workplace?

11. What factors have so far hindered your ability to make necessary/ relevant changes at your workplace or in your work?

12. Have you engaged in further learning on leadership in ICT since the training offered by GESCI?

- *If yes, probe for the nature and type of further learning. provider of the training*

13. Have you conducted training for other individuals on leadership in ICT since you graduated from the GESCI ALICT Course?

- *If yes, probe for to whom and how many people have been trained, supply or demand driven?*

14. What factors have made it possible for you to conduct training/mentoring to other individuals on this topic?

15. What factors have hindered your ability to conduct training/mentoring to other individuals on this topic?

Level 4: Results

32. What changes have taken place in leadership in ICT in your organization since your participation in the ALICT training?

- *(Organizations include: networks, sectors, government)*

33. What factors have influenced the achievement of the organizational changes?

2) *Probe for positive factors and negative factors*

- ii. Have you observed changes in leadership in ICT in other organizations since [insert time of training?]
- iii. What would you attribute the observed changes above to?

ADDITIONAL SECTION -CROSS-CUTTING TOO ALL FOUR LEVELS

Other external drivers/learning enablers of learning

19. What factors outside of the ALICT programme helped you to achieve the desired changes?

- Probe: personal commitment, motivation, opportunities on the job, other colleagues and alumni of the programme, clear structures , systems and processes, personal experience having the **space** to innovate)

20. What factors outside of the ALICT programme have hindered your efforts in making the changes you **anticipated**?

- *Probe: personal commitment, motivation, opportunities on the job, other colleagues and alumni of the programme, clear structures , systems and processes, personal experience)*

21. What suggestions or recommendations do you have for the ALICT programme going forward?

22. Do you have any more comments, suggestions or questions?

Thank you for your participation and wish you well with your work!

Appendix D: Interview Schedule for Skype Interviews

Name:

Country:

Date:

- 1) What would you say was the main thing you have learnt from participating in the ALIC-LATIC course?
- 2) In your opinion, do you think that the course has achieved its objective of: “Equipping future African leaders with a commanding understanding of the key elements in the development of knowledge societies; and building leaders’ capacities to be agents of change in their ministries, organisations and regions for the development of knowledge societies”. Please explain.
- 3) What specific skills have you gained?
- 4) How have these skills been of benefit on a personal level?
- 5) How is (what you have learnt) relevant to your work?
- 6) How have you been able to apply what you have learnt to your work?
- 7) Are you doing anything differently since participating in the course?
- 8) What would you say has been the main impact of the course on your personal work?
- 9) What has been the impact on your department/organization? Have you been able to influence changes?
- 10) What are the barriers to effecting change in your department/organization?
- 11) Do you think that any of your inputs have had influence on a broader level (for example at a community, sector, provincial or national level)? If so, in what way?
- 12) What are the barriers to adoption at a broader level?
- 13) What do you think would enable adoption at a community/regional/national level?
- 14) Which specific aspects of the course did you find most relevant?
- 15) What can be done to improve the course? (Probe whether changes need to be made to the content of the programme that will enhance implementation at the institutional and national level).
- 16) Have you participated in the ALICT Alumni Network? If so, please provide details of your participation. If not, please explain why you have not participated.