Barbara Birungi

'If **more women** owned mobile phones, there would be **more development**'

In 2010, Barbara Birungi founded Women in Technology Uganda. This NGO provides networking, training, mentoring and partnering to increase the number of women in technological fields. Ms Birungi is also Executive Director of Hive Colab, a business incubator in Kampala for East African start-ups in technological fields which also dates from 2010.

On 26 February, she was one of several speakers invited by UNESCO to describe how e-science was being used in their country to strengthen the interface between science, policy and society. One of the session's recommendations was for UNESCO to design a demand-driven web-based platform which would reflect the dynamics of the science–policy interface at all levels, from national to global. This session was one of more than 70 hosted by UNESCO at its Paris headquarters over three packed days, within a ten-year review of progress since the World Summit on the Information Society in 2003 which included recommendations for the post-2015 development agenda.

How many Ugandans have access to Internet and mobile phones?

Uganda has a population of 34 million. According to the Uganda Communications Commission, 14% of the population had access to Internet in 2011, whereas 39% owned a mobile phone. Mobile phone use is growing fast and Internet use is spreading but access to both technologies has been limited by high costs, especially those imposed by telecom companies for accessing Internet, as well as poor infrastructure in rural areas.

There is also a lack of electricity in most rural areas and frequent power cuts elsewhere. Illiteracy is another factor. It is projected that 85% of men and 71% of women will be literate in Uganda by 2015, according to the UNESCO Institute for Statistics. People also lack information on the benefits of both the mobile phone and Internet.

What is the profile of mobile phone users?

The majority of users are concentrated in urban areas. Most rural households own a mobile phone that is used by the whole family. The majority of these mobile phones are feature phones with a basic call and text function.

Most mobile phone owners are men. This has contributed to widening gender inequality in the country. The problem can be attributed to socio-cultural norms in rural areas, where men think it gives them superiority if they are the ones who own the mobile phone in the home.

Some men think that, if their wives own phones, it will create a way for them to cheat on them or disrespect them. I think that, if more women owned mobile phones, there would be more learning and development in communities but cultural norms make this difficult. Women would be more open than men to letting their children use their phones at an early age, thus introducing them precociously to technology.

Why are mobile phones so important for development in Uganda?

The most widely used technology for development in Uganda is the mobile phone because it can be purchased for US$10–20, an amount most families can afford. These mobile phones mainly use the short message service (SMS) and USSD[6] to send information within communities. Applications (Apps) may include prepaid roaming or mobile chatting and have the advantage of not needing to be installed on the phone. Most of these applications are built by NGOs and non-profit organizations like Hive Colab, Texttochange, UNICEF and the Grameen Foundation, as well as by government departments like the Ugandan Ministry of Health, Agriculture and Youth.

Most applications target the rural population. As the majority of people are farmers and there are not enough medical centres, the emphasis is placed on health and agriculture. A recent application called WinSenga blends old and new technology. A highly sensitive microphone is placed inside the traditional Pinard Horn with which midwives listen to the heartbeat of the foetus. Using an algorithm that converts the frequency (Hertz) to heartbeats per minute, the application can pick up the foetal heartbeat and transit it to the smart phone, which then runs an analysis. WinSenga can measure the position of the foetus in the uterus and calculate its age; it can also help detect an ectopic pregnancy or abnormal foetal heartbeat. The application is the brainchild of three Ugandan software developers, Joshua Okello, Aaron Tushabe and Josiah Kuvuma, who say the idea came to them after a visit to a maternity ward in Kampala.

What other applications target women specifically?

I am part of a group affiliated with Women in Technology Uganda which has created Mama-App, a mobile phone application which uses SMS to send information to women on pregnancy care and

monitoring. The message for the first trimester of pregnancy, for example, advises the woman to drink lots of water, avoid alcohol and eat green leafy vegetables. Other messages advise on infant care in the first few days of life or on the prevention, early detection or cure of infection. Messages may also provide information on nearby health centres and reminders about immunization and contraceptive use.

I got the idea for this application after visiting Mulago Hospital when a relative was in labour. While I was waiting to see her, I heard teenage girls and poor women who had just given birth talking casually about their prenatal care. Their conversation shocked me. Some had not attended more than two check-ups because they could not afford transportation or had been discouraged by the long queues at the hospital. When they went into labour, there were only a handful of nurses for more than 80 women. The women had no plans to have their babies' progress monitored in the weeks following the birth and some did not even understand the importance of immunizing them. Most of these women were discharged that very day; I couldn't help wondering how many of those babies would survive.

Mama-App also provides secondary school girls with information on the dangers of early pregnancy and preventive measures they can take, via a version designed for schools, Desktop App. Girls can access information at any time on their mobile phone using Desktop App, which dispenses with the need for an Internet connection.

I believe technology will reduce the number of unwanted teenage pregnancies in Uganda because most parents find it embarrassing and improper to talk to their children about sex, especially in rural Uganda. As for teachers, they have too much on their plate to make it a number one priority. Desktop App puts information at the girls' fingertips.

In addition, the government sends out health alerts to the masses by SMS whenever there are outbreaks of disease. It is also making it easier for women to report domestic violence by providing toll-free phone numbers, among other areas of concern.

What other groups are being targeted?

The basic feature phone is being used by private companies to send information to farmers on market prices and fake chemical products available on the market. Farmers also receive information on how to prevent, diagnose and cure plant and livestock diseases and combat pests. Farmers can also use their mobile phone to buy and sell produce without physical contact.

UNICEF has given youth a voice with U-Report. To become a volunteer U-reporter, a person simply sends a text message with the word 'join' to a toll-free number. Topics discussed so far have included female genital mutilation, outbreaks of disease, safe water, early marriage, education, health and inflation. Less than a year after the launch, there are 90 000 U-reporters, with up to 500 joining the network daily.

How are young Ugandans using ICTs to improve governance?

Initiatives target the education sector in particular. One example is Not In My Country, a website which allows university students to monitor their teachers and report cases of absenteeism and other forms of abuse, such as extortion or sexual harassment. Teachers monitor what is being written about them on the website and adjust their behaviour accordingly. Students sign up using an assumed name, so that no-one can trace a comment or report back to them. The university administration and other teachers monitor these reports and sanction their employees when necessary. The website was founded by an international group of concerned citizens from different walks of life. It focuses on universities because they produce Uganda's future leaders. 'If students learn at university that they must buy their grades with cash and bypass bureaucracy by selling their bodies,' the website states, 'their resulting cynicism will persist into their future careers.'

Last year, a group of private and public organizations in Uganda came together to encourage developers to create applications that will promote good governance. The movement is led by the NGO Development Research and Training and the technology hub I head, Hive Colab, which is hosting a governance application development challenge this year.

What more could be done to maintream ICTs?

The government should set up community media centres to enable poor rural communities to access information. It should also make ICTs affordable for the masses and improve related infrastructure.

In addition, the government should work hand in hand with community-based organizations to develop and enforce policies that support the spread of ICTs, including education policies. With government funding, local organizations can help to disseminate information and learning on a massive scale and give citizens a voice.

The government should also support existing technology incubation hubs and introduce training schemes and competitions to encourage youth to create applications in all economic sectors. There is currently little or no local investment in the youth technology sector and little training or mentorship. Young inventors and entrepreneurs do not learn any business skills or have access to legal advice. Innovation centres within universities and technology hubs like Hive Colab have only sprung up in the past two or three years in Uganda. These alone cannot support the whole creative technology sector. They themselves need government support, in order to help youth create viable applications.

What role could youth play in the proposed web-based platform at the science–policy interface?

Youth can create mobile phone applications and web software to increase citizen participation in policy formation and implementation. They can also use mobile phones to collect and disseminate information, especially to the elderly who may not otherwise have access. Young people can also identify issues that the platform needs to address, translate the platform's information and otherwise help make the platform user-friendly. They can also play an advocacy role by encouraging people to adapt to new policies. Via social media, they can also engage government agencies and provide these with feedback from citizens.

Interview by Susan Schneegans and Nicole Webley

6   Unstructured Supplementary Service Data is a global system for mobile communication technology that is used to send text between a mobile phone and an application in the network.