

How Mobile Technologies Are Leading to Economic Development in Sub-Saharan Africa

Nigel McKelvey

Letterkenny Institute of Technology, Ireland

Adam Crossan

Letterkenny Institute of Technology, Ireland

Kevin Curran

Ulster University, UK

INTRODUCTION

Mobile technology today is increasingly being used to help improve under developed and developing areas such as sub-Saharan Africa. With the statistics showing the number of adults in Africa owning mobile devices steadily increasing, mobile technology has been a popular area of interest to use to help improve areas such as healthcare and education throughout African cities and rural areas. Common that ways mobile technology is being used to help the residents of sub-Saharan Africa are in the sectors of health care and education. Mobile technologies being used in these areas whilst simple are incredibly effective and successful in helping to better the quality of health in education in sub-Saharan Africa. Many of the projects and systems developed using mobile technology focus mainly on urban areas. While reports state the huge increase in the number of those using mobile devices in Africa, along with the large estimated increase in the coming years, the difference between rural African countries and countries which contain urban cities is substantial.

Other uses of mobile technology in African cities includes topping up smart cards with mobile devices for the distribution of clean water as well as the delivery of vouchers which can be exchanged for healthcare equipment. This chapter will show how mobile devices are being used to track and monitor the outbreak of malaria in sub-Saharan Africa and is applied to a system to help ensure health care facilities in areas with affected residents have the capacity to deal with those who have contracted the disease. We also outline the ethical effects of using the mobile devices and how they are affecting the residents of sub-Saharan Africa.

BACKGROUND

Mobile Technology is a sweeping term covering many different areas of technology. Many of the uses for this technology in developed countries include helping with general day to day operations for the user such as online banking, shopping, or social media applications. Mobile technology is a sector which is growing rapidly, and also merging with other sectors to help make use of the technologies full potential. One of the areas where mobile technology has been proven to be successful, is when using

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simple technology and mobile devices to help developing countries such as Africa (Aker & Mbiti, 2010). Many different organizations and companies are using mobile technology to accomplish huge feats for rural African villages (Abuka, 2016). A leading success story has been the M-Pesa service launched in 2007 by Vodafone for Safaricom and Vodacom. This has generated mobile money revenues of more than \$300 million in 2004. This makes it the most successful mobile transfer service at this time. It has now expanded to Afghanistan, South Africa, India and Eastern Europe. It seems to have found its niche market. In Kenya alone, mobile money transactions totalled \$22+ billion in 2013. Other African countries such as Sudan, Somalia, Tanzania, and South Africa are also huge revenue generators for operators as well (BBC Africa, 2015).

In today's world when discussing developing countries, the most commonly mentioned country is Africa. Africa is known worldwide for its widespread poverty, levels of education, unsanitary living conditions, gang violence and high mortality, and birth rates. Many companies and organizations are now turning to mobile technology to help combat these issues facing those living in Africa. With the increase in advancements in technology, many organizations and companies are researching and looking into how some technologies could be adapted to help reach areas which are usually not easily accessible. A simple yet effective method at developing communication with these areas is through mobile devices. In recent years the ownership of mobile phones in Africa have increased rapidly, with the percentage of adults who own a phone rising from 64% in 2002 to now match the US with 89% in 2014 (Global, 2015). An infographic depicting this information can be seen in the appendices chapter as image 1.0. As shown in reports conducted by Pew Global (2015), the most popular activity for mobile phone users in Africa is sending text messages. The report shows that 80% adult cell phone owners use their phone mostly to send text messages as seen in infographic image 2.0 in the appendices chapter below. SMS is arguably the most popular activity in this area due to the fact that many in this area only have ownership of a cell phone rather than smartphone, with a study conducted on Nigerian residents showing that although 89% of the population there owned a mobile phone only 27% owned a smartphone (Pew Global, 2015).

MOBILE TECHNOLOGY IN AFRICA

Africa is known for its lack of proper infrastructure, and industrialization. Technology is not something that is commonly associated with Africa. The main contributing factor for this being that mostly all technology needs to be powered in some way. A study by The World Bank (2013), showing that 76% of sub-Saharan Africa is without access to electricity, the possibility of being able to use technology within these areas decreases drastically. Another area of technology which is obstructing the growth of use of technology in Africa is connectivity. A study by iPass, (2014) shows that if growth in connectivity hotspot numbers continue to grow at the same rate as previous years then by 2018 there will be a WiFi beacon for every 20 people on earth, however only one beacon for every 400 Africans.

Education

The use of mobile technology has been hugely influential in the improvement of education throughout Africa (Asongu et al., 2016). The need for helping improve education throughout sub-Saharan Africa has been a main priority for many organizations, one of which was Oxfam. Oxfam are a charity organization which help in delivering medical aid, supplies and help to a number of different countries including Africa (Oxfam, 2016). One particular project which Oxfam began was to help improve sub-Saharan

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