

The Role of Digital Innovation in Rapidly Managing the Ebola Outbreak in Nigeria

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Presentation Outline

- Introduction
- Digital innovation in Nigeria
- Overview of Ebola outbreak
- Impact of Digital interventions during the outbreak
- Potential lessons for the future
- Conclusion



BACKGROUND

Introduction

- How many people have heard about the Ebola outbreak in West Africa?
- How many people have heard about any digital innovation in the response to the Ebola threat?
- Well today, I plan to draw your attention to the innovative response of Lagos to the threat. And how this may be useful in other urban settings.

Introduction

Information and communications technology (ICT) has become a vital aspect of any economy

- It is an essential infrastructure that promotes the development of other sectors such as agriculture, education, health, banking, industry, transportation and tourism
- It is also indispensable in times of national emergencies or natural disasters

Introduction

- **Digital innovation** is the application of digital technology and tools to the challenge of offering consumers enhanced or unique value such as convenience, affordability, increased benefits, etc.
- **Digital technologies** are combinations of information, computing, communication and connectivity technologies including mobile networks, social networks, etc.



DIGITAL INNOVATION IN NIGERIA

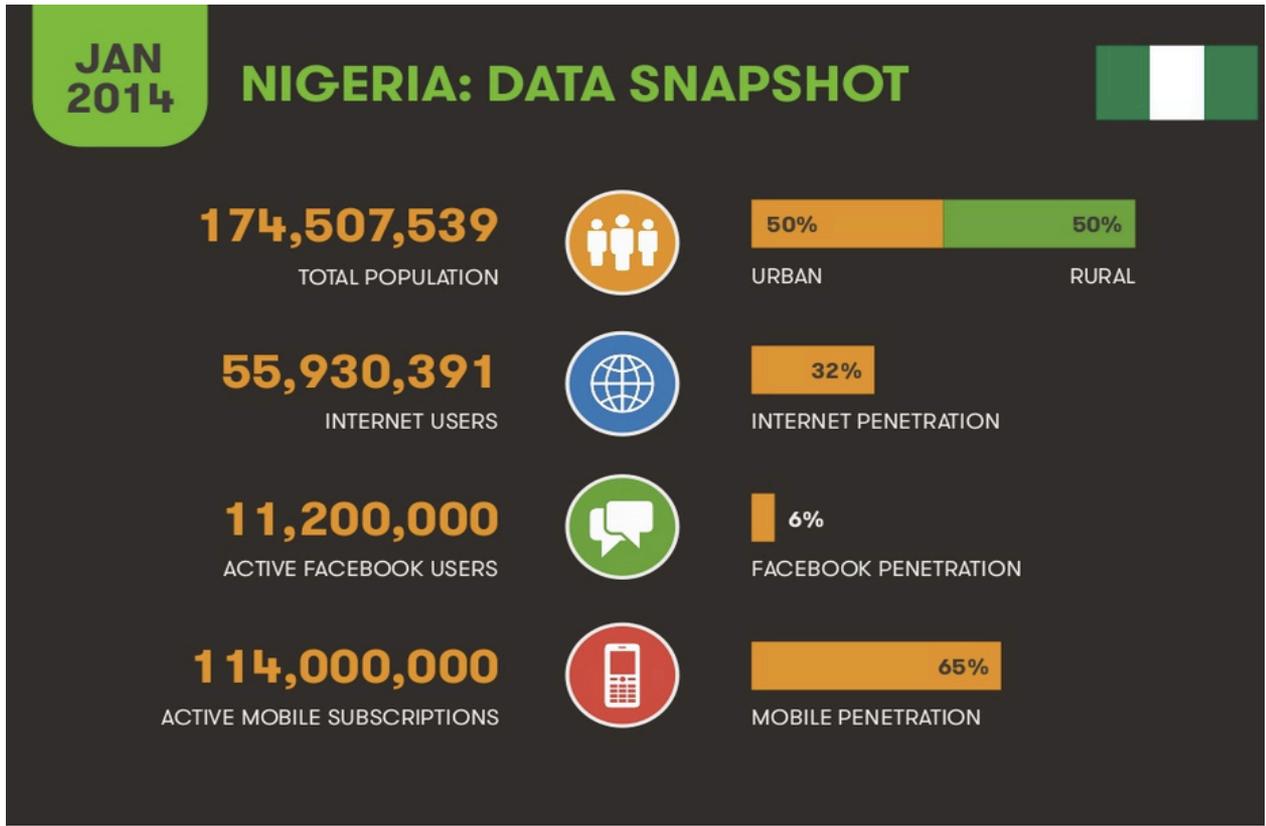
Digital Innovation in Nigeria

- The ICT industry has experienced continuous growth and rapid progress globally
- There are more ICT users worldwide and more people communicating today than ever before
- The “digital divide” separating developing and developed countries has been shrinking with a growing number of mobile subscribers and access to internet usage.

Digital Innovation in Nigeria

- In Nigeria, phone services are widely available while internet services are increasingly accessible on mobile phones making it possible to transact a wide range of activities formally
- Nigeria has Africa's largest mobile market: a national population of about 170 million people with more than 149 million subscribers (GSM) and a penetration of 107% as of 2015 (according to the NCC).

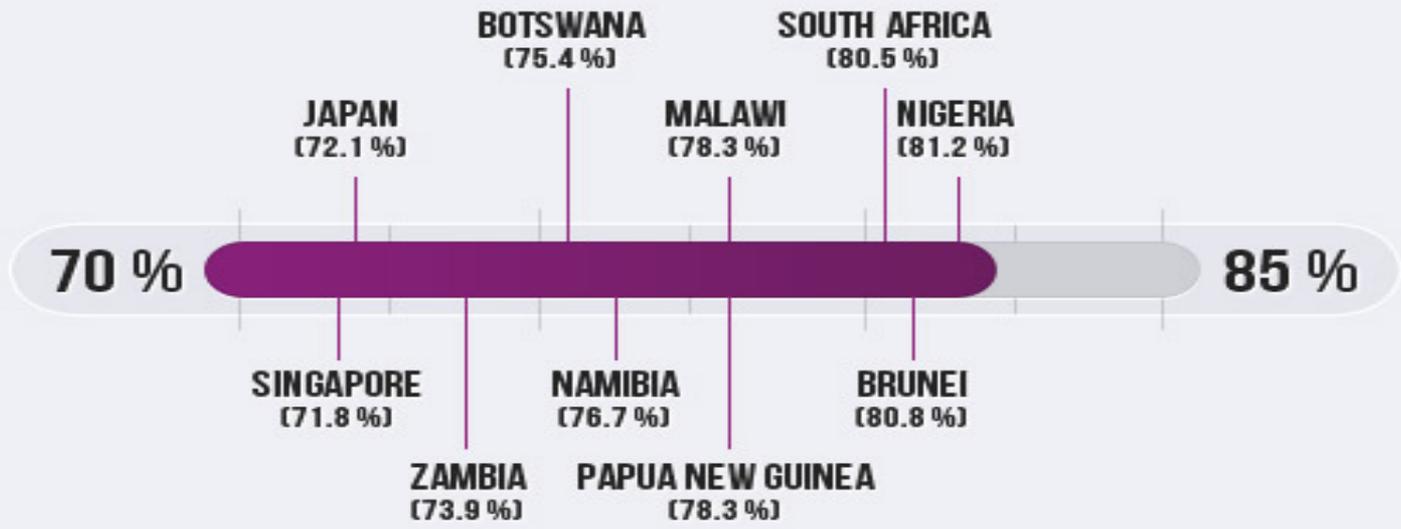
Digital Innovation in Nigeria



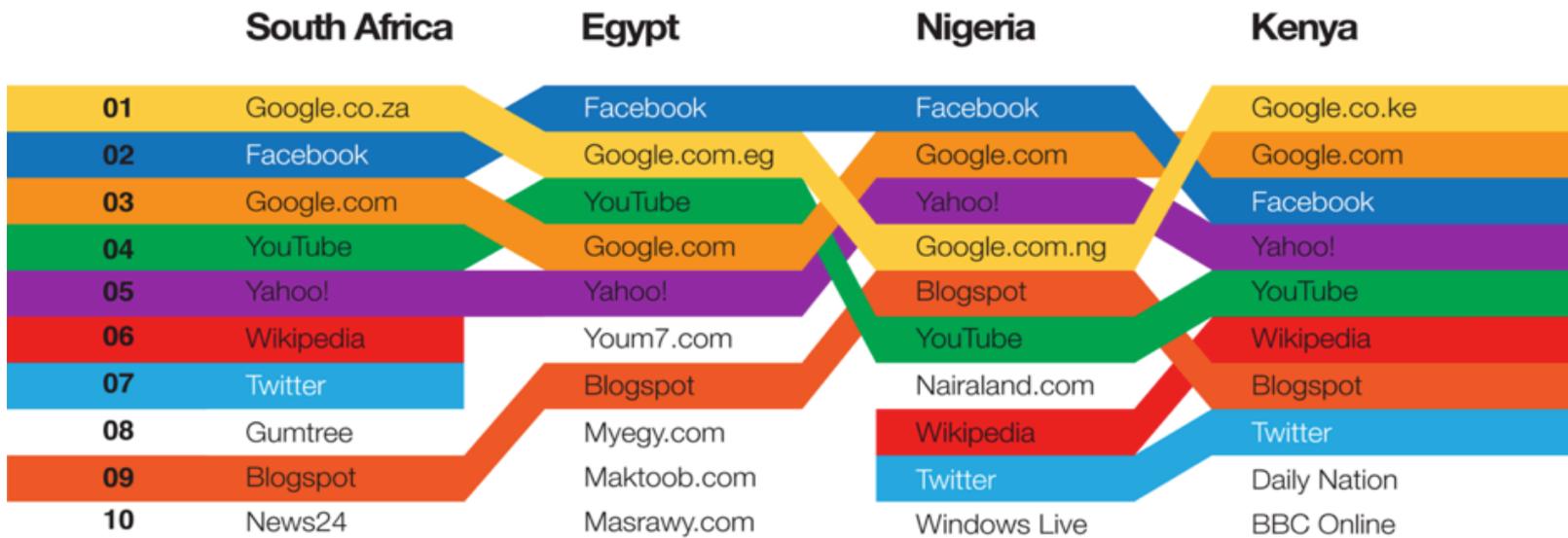
Digital Innovation in Nigeria

- A rapidly increasing youth population along with infrastructure improvements in technology have led to the development of innovative digital solutions such as e-payment systems, e-commerce platforms facilitated by the expansion in mobile telecommunications. According to techcrunch.com, Africa's first billion-dollar tech IPO may be imminent with digital payment company – Interswitch.
- Nigeria also has Africa's highest number of internet users and Facebook users. Over 11 million Nigerian Facebook users; more than 15% of people online in the country currently using the platform.

TOP 10 COUNTRIES WITH THE HIGHEST FACEBOOK MOBILE PENETRATION



Digital Innovation in Nigeria: African Top 10 Websites



Twitter and YouTube are amongst the most visited websites in Nigeria

Digital Innovation in Nigeria

Social media has proven to be an effective means of reaching target audience as popular brands, media, celebrities, politicians, etc. have taken advantage to improve on their presence.



**OVERVIEW OF THE
EBOLA OUTBREAK**

Overview of Ebola Outbreak

- The recent Ebola outbreak in West Africa commenced in a remote area of southern Guinea in December 2013, with the first cases being reported in March 2014
- It is considered to be the worst in history due to an almost unimpeded spread from Guinea to Sierra Leone, Senegal, Liberia, Mali and Nigeria.

Overview of Ebola Outbreak

- Governments of the affected countries and the WHO launched an emergency response which included collaborations with mobile network providers to harness the penetration of mobile phone subscription to provide low-cost, high impact mobile health solutions
- These solutions were used for mapping outbreaks, providing education to support behavior change and providing training materials that health workers can download onto their phones

Overview of Ebola Outbreak: Nigeria Summary

- On July 20, 2014, Ebola arrived in Nigeria, through Lagos, a city of 21 million people.
- The dense population and overburdened infrastructure create a setting where communicable diseases can be easily spread and transmission sustained.
- Thus, the threat to Nigeria posed by the arrival in Lagos of a patient acutely ill with Ebola was potentially enormous.
- The government responded rapidly by setting up a thorough contact tracing system to identify and follow up all potential cases.
- The arrival of the index patient led to a chain of events in which 894 contacts were identified and followed for Ebola symptoms.
- This amounted to approximately 18,500 in-person interviews in Lagos, Port Harcourt and Enugu.
- A total of 20 confirmed cases occurred, along with 8 deaths.
- Nigeria was certified Ebola free by WHO on October 20, 2014 after 42 days of no new reported cases.

Overview of Ebola Outbreak: Lagos Spotlight

- First time Ebola had been identified first in an urban city
- Lagos is a city of estimated 15-20 million people with 4000 new immigrants a month
- Commercial capital of Nigeria (probably responsible for at least 40% of Nigerian GDP) and probably largest commercial center in Africa



Premier location
of the Nigerian
Ebola outbreak

Source
www.mashable.com

Overview of Ebola Outbreak: Lagos Spotlight

- Lagos has a mixed ethnicity/primary language, faltering power, limited availability of water, modern hygienic facilities and overcrowding
- Bush meat and “suya” favorite delicacy
- Regional religious center - several mega churches (services sometimes attract several million people from across West Africa, South Africa etc.

Source

Freedman A. (2014). How Nigeria and Senegal Halted Ebola When Other Countries Failed. www.mashable.com; CDC (2014) MMWR.



The Redeemed Christian Church of God Annual Convention.

As many as 300,000 people in attendance

Source
www.proof.nationalgeographic.com

Overview of Ebola Outbreak: What Lagos Had in its Favor

- Dynamic private sector including largest African Conglomerate
- Center of IT innovation in West Africa and high mobile phone penetration (probably over 80%) as well as Television and radio channels
- Good hotels - so international partners were relatively physically comfortable
- A city of survivors with a “we can do this attitude” - daily life in Lagos can be chaotic and challenging but Ebola we will overcome
- Nigerian Diaspora - including ANPA
- Religious and Community leaders willing to spread the word on Ebola



IMPACT OF DIGITAL INTERVENTIONS DURING THE OUTBREAK

Impact of Digital Interventions: Social Media

- Several social media platforms were spontaneously developed for the purpose of providing the public with accurate and timely information about the disease and events surrounding the outbreak – later linked to the EOC
- @EbolaAlert and @EbolaFacts both handles on Twitter and Facebook helped furnish the populace with essential information through short, simple and easy to understand messages
- @EbolaAlert Twitter handle had over 200,000 hits per day in Nigeria. The corresponding website, ebolaalert.org had 4 million hits in August 2014 alone.
- The EbolaFacts website had 600,000 visitors in the first week and 2.8 million on Facebook as of August 24, 2014- a month after initial confirmation of the virus in the index patient

Impact of Digital Interventions: Social Media

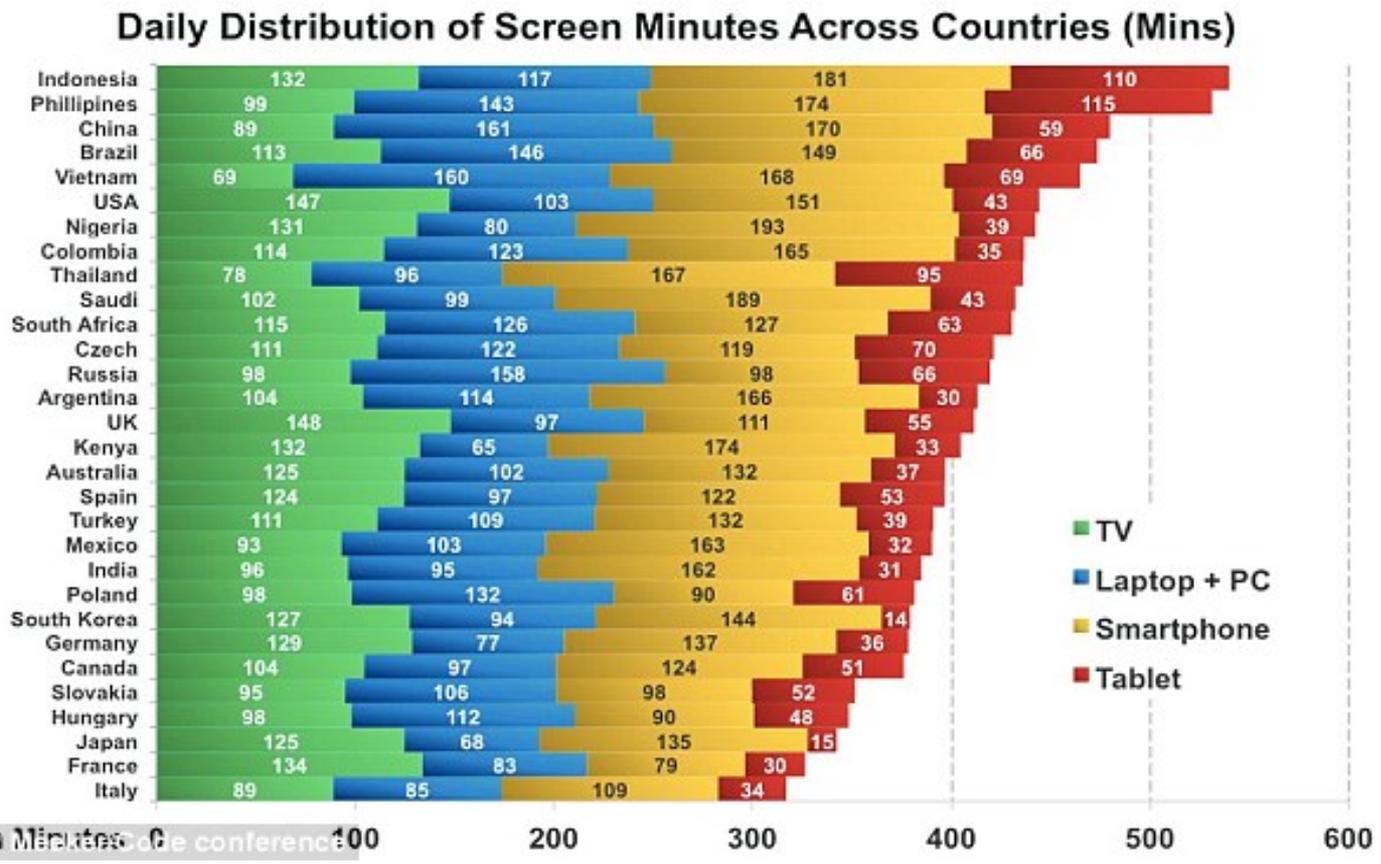
- Also, importantly, the social media platforms helped debunk misconceptions that were making the rounds particularly false rumors on remedies and cures for the disease.
- They also provided a channel for recruitment of volunteers and distribution of educational materials
- Nigerians were very active on social media during the outbreak – especially on Twitter. Hash tags such as #Ebolachat, #StopEbola were used to keep the conversation going

Impact of Digital Interventions: Mobile Technology

- EbolaCheck, a phone app, was also created as a diagnostic support tool.
- The combination of the social media platforms and the phone app contributed to the rapid successful containment of Ebola in Nigeria
- The app is reported to have reduced reporting times of infections by 75%
- Nigerians are reported to spend over 3 hours daily viewing their mobile devices- probably the highest on record in the world
- This practice undoubtedly facilitated the increased awareness of the disease, leading to the rapid containment of its spread.
- 24 hr. emergency phone services and bulk SMS were some of the other tools employed during the outbreak



The Mobile Network: Nigerians spend ~ 3hrs and 13 minutes daily viewing their mobile devices – probably among highest in the world



Source: UK Daily Mail Online; 2014 study by Milward Brown (Brand Strategy Consulting Firm) that surveyed 16 to 44-year-olds, was recently presented at the Code Conference in California.

Impact of Digital Interventions: Education

- Public education and the training of health care providers was a crucial part of the Ebola response.
- Authorities needed to rapidly disseminate health information and materials to medical personnel and patients and they realized they could do this using digital applications.
- Vecna Cares Trust in collaboration with Anadach Group created a mobile tutorial on Ebola which was then distributed by Instrat GHS to health care workers across Nigeria.
- The tutorial discussed the causes of Ebola, how it spreads, ways to diagnose the disease and how to treat it.
- The informational material generated positive response from Nigerian health care providers who revealed that it raised awareness of disease screening and treatment and gave workers valuable treatment information.

Impact of Digital Interventions: Increased Awareness

- In many ways, the successful utilization of advanced wireless technologies to fight the Ebola outbreak in Nigeria drove the increased focus on mobile phones elsewhere in the region
- In Sierra Leone, the government provided a hotline through which worried people can contact officials for advice
- In Mali, an awareness campaign through the use of SMS was developed- a free service through which people can SMS the word EBOLA to a short code then receive several text messages on Ebola over a 2 day period.

Source

Otu A. et al (2015). Effectiveness of an m-Health intervention in improving knowledge and attitude of frontline health workers to Ebola Virus Disease in Nigeria; Unwin T. (2014). On the contribution of ICTs to overcoming the impact of Ebola. unwin.wordpress.com



POTENTIAL LESSONS FOR THE FUTURE

Potential Lessons for the Future

- Digital technology when applied appropriately can solve health and health related problems
- Public health challenges in particular can be managed using innovation and appropriate technology
- The EbolaAlert technology, though initially deployed to stop Ebola and make necessary information on the disease accessible, has recently been applied to the ongoing Lassa Fever outbreak
- LassaAlert like its Ebola equivalent, was set up to complement the activities of the Lassa EOC (Emergency Operations Center)
- These along with national hotlines are part of the national response plan to the outbreak of Lassa Fever in 2016



Potential Lessons for the Future

- Modern computing facilitates analysis of disease patterns through new algorithms which can produce insights that inform disease control planning
- These new algorithms are applied to disease outbreaks including influenza transmission and polio spread in northern Nigeria
- They show how pathogens have dispersed geographically, findings that can be usefully combined with the mapping of human movements
- Novel digital tools are continuing to drive the rate of advance and scope of impact of digital methods in real-world epidemiological applications



CONCLUSION

Conclusion

- The use of mobile and wireless technologies to support the achievement of health objectives has the potential to transform the face of health service delivery across the globe
- The penetration of mobile phone networks in many low and middle-income countries surpasses other infrastructure such as paved roads and electricity
- Mobile technologies have already changed and will continue to change the lives of millions around the world
- Rapid advances in mobile technologies and applications, a rise in new opportunities for the integration of mobile health into existing eHealth services and the continued growth in coverage of mobile cellular networks are some of the factors driving this change

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ANALYZE | ADVISE | ACHIEVE

EMAIL: info@anadach.com

TWITTER: @Andach

WEBSITE: www.anadach.com