Chapter 38

A New Educational Mobile Devices Platform for Social Inclusion in Tanzania

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ABSTRACT

It is evident that advances in technology has led to improvement in societal wellbeing. In this paper we demonstrate how mobile phones are used in providing reliable and quality education to students in disadvantaged areas of Tanzania. The main contribution is on leveraging on the success that Tanzania has had on using mobile banking to the un-banked population. These lessons are adapted to the education sector, where clever/smart integration of existing disruptive technologies such as mobile phones and social networks are be used to provide access to high quality educational contents. Further, the paper shows how educational content can be localized/adopted with a view of empowering teachers and the educational needs of students. The central piece of the proposed system is the ability to add, share and reduce the amount of redundancy. Finally, the author reports on the implementation of the system in a community project in rural Tanzania.

1. INTRODUCTION

In the last two decades, the proliferation of mobile phone networks has transformed communications in the world and the sub-Saharan Africa is no exception. It has also allowed sub-Saharan Africa to skip a few generations of technology development and jump right to the digital age. According to the research done by Pew Research the ownership of mobile phones in sub-Saharan Africa is comparable to developed countries (Poushter & Oates, 2015). However, in another research Pew Research show significant gender and educational differences in mobile phone ownership and usage (Poushter, Bell, & Oates, 2015). While it is argued that most people from these countries afford owning mobile phone, the cost of running a mobile phone is still significantly higher compared to their annual earnings. These tariffs will continue to be high until governments enact legislations that will allow them to curb/control the profit motives of the mobile network operators.

The use of mobile phones has gone beyond the ability to make phone calls. Nowadays a myriad of value added services are available even in low end mobile phones. These value-added services have stimulated innovations in all walks of life from healthcare to agriculture and education. For example, mobile phones have provided one of the most disruptive forces that the payments industry has seen in Tanzania. Mobile phones are unleashing profound changes and innovation in the development of simple, personal and always available mobile payment schemes. The advent of mobile payment schemes has led to the emergence of new business models and players, such as mobile payment providers, aggregators and agents. It is no wonder that consumers throughout Tanzania want to use mobile payment schemes because they are convenient, personal, on demand and are seamlessly integrated into everyday life. Further, these mobile payment schemes are challenging the very existence of traditional financial services such banks.

The majority of Tanzanians are and will continue using cash as a way of paying for services for a foreseeable future. However, mobile payment schemes are now a feasible way of reducing the amount of cash which people and the society as a whole carry for paying for services. This is clearly demonstrated by the success of first generation mobile payment schemes such as M-Pesa, TigoPesa, Airtel Money etc. The second generation is a group of mobile payment aggregators consisting of the likes of DataVision International Limited (2016), Selcom Wireless (2016), Maxcom Africa (2016). For example, DataVision International Limited is now offering customized services such as Ada-Lipa. The availability of all these services is providing a fertile ground for further innovation in mobile payment schemes which can be extended using the same aggregation platform; the possibilities are surely endless.

There are a number of communication technologies employed in mobile payment schemes. These technologies include SMS/Unstructured Supplementary Service Data (USSD) due to its compatibility with any mobile phone and ease of implementation, used mainly in developing countries. Other communication technologies are near field communication (NFC), Quick Response (QR) codes, Bluetooth Low Energy (BLE), sound wave and Magnetic Secure Transmission (MST). In applications areas such as education or healthcare uses other technologies such as instant messaging, web email and podcasts/vodcasts (Chipangura, 2013).

Mobile payment schemes have and are going to form one pillar of financial transactions in Tanzania. The mobile payment if used innovatively will guarantee the success of e-Government, m-Government, healthcare and education in Tanzania. The future of mobile payment schemes will be littered with new technologies. Some of these hold great promise for example, wearable technologies allow to make payments via an electronic device worn on your body such as a watch. Peer-to-Peer Payments (P2P) where consumers can pay people directly via electronic channels, including social media. Virtual currencies allow users to transact with currency based on cryptographic algorithms. Cloud based mobile payment might lead to the development of mobile payment systems using a cloud based architecture.

Mobile phones have not only revolutionized the way we communicate but also, in many classrooms around the globe, mobile technologies are increasing the power of learning. When mobile phone are an integral part of teaching they can reduce stationary usage which is one of the major costly items for students. Further, the use of mobile phone in education will encourage and accelerate the use of the cloud. Mobile phones are affordable for most people and provide greater opportunities to foster collaborative learning.

Mobile phones have the potential of creating greater access to education around the world. It is expected to break even the gender barriers and social stigma. The project reported in this paper was done to empower young girls in Tanzania by improving their technical literacy in programming and the can do attitude. Further, to increase their confidence and self-esteem and gain marketable skills. This project

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