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FACULTY OF ENGINEERING

DEPARTMENT OF COMPUTER ENGINEERING

LOCAL ANDROID APPLICATION STORE WITH MOBILE MONEY PAYMENTS

BY

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DECLARATION

I **DUNCAN MUDULO** Registration Number **BU/UG/2012/75** hereby declare that this project report is my original work except where explicit citation has been made and it has not been presented to any Institution of higher learning for any academic award.

Sign: ……

Date: ----------

APPROVAL

This is to certify that this report under the title **"Local Android App Store with Mobile Money Payments"** has been done under my supervision and is now ready for examination

Miss Asingwire Barbara Kabwiga

Department of Computer Engineering

Sign:…….

Date:…….

DEDICATION

I dedicate this report to my Lord Jesus Christ, my blessed parents Mr and Mrs Kayizzi, my siblings, my excellent supervisors Mr Gilbert Ocen and Miss Asingwire Barbara Kabwiga, all my friends, and Google for creating and Open Sourcing Android.

Thank you all.

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Great appreciation goes to my Lord Jesus Christ, for giving me Life. I greatly appreciate my parents and siblings for the support, encouragement and motivation.

I also thank Mr Gilbert Ocen and Miss Asingwire Barbara Kabwiga and the entire Department Of Computer Engineering for the technical guidance throughout the execution of this project.

Lastly but in no way the Least, I appreciate Google Inc, for creating and open sourcing the Android platform.

List of Acronyms

API	Application Programming Interface
MNO	Mobile Network Operator
APP	Application
SMS	Short Message Service

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ABSTRACT

The use of smart Android devices in Uganda has greatly increased over a few years due to their affordability, availability and functionality. Users interact with android devices through applications, commonly called “apps”, which are either pre-installed by the manufacturer (System Apps) or are downloaded by the user. Apps can be free, or paid, depending on the vendor.

Google Play is the premier store for all Android applications, offering a vast amount of apps for entertainment, utilities, messaging, business, gaming, and other sub-categories. However, there are other app stores like Mobogenie, Samsung Galaxy Apps, Amazon App Store.

Free apps generally do trivial tasks like messaging, music, video and games. Paid apps do offer more services, in terms of functionality, for example medical services, and the purchase of digital content.

These apps are really cheap, they cost in the range of $0.5-$3 for a one time purchase. However, the payment methods available on app stores cannot be used by the Android phone owners in Uganda, being a cash driven economy, with an extremely small percentage of users managing to own a debit/credit card, let alone the fact that even some local banks like Centenary Bank do not support the use of debit and credit cards.

This project was therefore aimed at developing an Android App Store that use the mobile money service as a payment system for the purchase of paid apps.

The work is arranged mainly in six chapters, Chapter one includes the introduction of the Project. Chapter two discusses the literature related to the system, Chapter three illustrates the methodologies used in coming up with the working prototype of the system, Chapter four includes system design and analysis, Chapter five contains the implementation and testing of the system and chapter six contains the sum mary of the work, , discussions and recommendations.

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CHAPTER ONE

1.0 INTRODUCTION

This chapter comprises of background, problem statement, justification and objective of the study**.**

1.1 BACKGROUND

Android is a mobile Operating System (OS) currently developed by Google, based on the Linux kernel and designed primarily for touchscreen mobile devices such as smartphones and tablets. Android powers more than a billion devices around the world. It's the largest installed base of any mobile platform and growing fast [1].

Users interact with Android devices through android applications. Google Play is the premier marketplace for selling and distributing Android apps. However, there are many other application stores, usually owned my Android device manufacturers, including third party stores that provide apps to users.

For free applications, the user simply signs into the app store using his/her account and clicks a download / install link. However, for paid apps, the user has to make a payment to get the app.

Due to the Web based nature of all app stores, the payments are made using an online payment scheme, for example, the use of Credit or Debit Cards via PayPal

There are a number of fundamental challenges to reaching the local mobile users with online financial services that have blocked market growth in the past. The key challenge is that the vast majority of the locals live in a cash economy, and almost everything is paid in cash. Also, many of the users do not know how to do an online payment.

However, Mobile Money appears to have the potential to solve many of these issues. By giving banks and other financial services providers a cheap way to outsource cash handling and deposit and withdrawal transactions, mobile money can allow providers to serve clients at lower cost per transaction and with a reduced investment in physical infrastructure [2].

According to Bank of Uganda, as of end of June 2014, the number of registered users reached 17.6 million compared to 12.1 million for the financial year ended June 2013, representing an increase of 46 per cent [3].

Clearly, locals are well acquainted with the use of Mobile Money to make payments, due to the ease, convenience, reliability and accessibility if the service.

Therefore, there is a requirement to have an application store, through which users can buy applications using mobile money

1.2 PROBLEM STATEMENT

There is a vast amount of free Android apps on stores, but these only do trivial tasks like games, entertainment, messaging, photo editing etcetera. Paid apps, which provide more important uses, like Medical, Business, can be purchased from app stores using supported Online Payment schemes, which vary per store. However, many of the supported payment schemes cannot be used by the average Android phone owner in Uganda, even if he / she wanted to buy an app.

1.3 OBJECTIVES

1.3.1 MAIN OBJECTIVE

To design and implement an Android app store, that uses mobile money as a payment method for purchasing apps.

1.3.2 SPECIFIC OBJECTIVES

i. To identify the requirements needed to design a Local Android App store that allows users to purchase apps using mobile money.

ii. To design and develop a functional and complete user interface for the system.

iii. To design and develop a fast, secure server-side sub-system to serve user requests.

iv. To design and develop a web based messaging API to handle and process SMS receipts.

v. To implement and test the system.

1.4 JUSTIFICATION

A Local Android mobile user can only derive utility from his / her Android device if the apps there can help him / her simplify certain tasks, for example, a farmer marketing produce.

There is a vast amount of free apps on stores, but these only do trivial tasks like games, entertainment, messaging, photo editing, etc.

Most of the advanced applications go at a fee, on app stores. By advanced, I mean apps that are utilitarian – things users do often enough to make it worth paying for the upgraded experience or additional features beyond what you could get in a free version.

The apps aren't expensive, but there is no direct and easily accessible method to purchase them. However, almost every smart phone user has made a mobile money payment, they all know how to go about it.

Hence the need for an app store, through which users can buy Android applications, using a technology they know, that is the mobile money technology

1.5 SCOPE

1.5.1 TECHNICAL SCOPE

- This version of the system runs on an Android device
- The application purchased is compatible with the user's device.
- The transactions are made across the same network
- That the user pays the exact amount required for the application.
- That all parties making transactions have their numbers registered for the mobile money service.

1.5.1 GEOGRAPHICAL SCOPE

- The system is tested in Uganda.

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