

**BUSITEMA UNIVERSITY  
FACULTY OF ENGINEERING  
DEPARTMENT OF COMPUTER  
ENGINEERING**

**COMMODITY IDENTIFICATION AND NAVIGATION  
SYSTEM IN SUPERMARKETS**

**BY**

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**DECLARATION**

I BUKENYA FRANCIS, BU/UP/2013/188, do hereby declare that this project report is original and has not submitted for any other degree award to any other University before. Any views expressed in the report are those of the author.

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## LIST OF ABBREVIATIONS

Apk	Android Package
GPS	Global Positioning System
HTML	Hyper Text Markup Language
HTTP	Hyper Text Transmission Protocol
IDE -	Integrated Development Environment
I/O	Input Output
MySQL	My Structured Query Language
PC	Personal Computer
PHP	Hypertext preprocessor
SDK -	Software Development kit
SQL	Structured Query Language
XML	Extensible Markup Language

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## **ABSTRACT**

In Uganda today, the average time wasted by supermarket clients to identify the exact location of the desired commodity and navigate to it is definitely plenty. The customer searches for the required commodities through the different aisles to various sections, others keep inquiring from the supermarket workers where the commodities of their interest are located which compromises their privacy and convenience during their shopping. Some customers also keep following the writing of the different categories of commodities in the supermarket. Therefore, the system developed enables the customer to easily know the location of the commodity and navigate to it. The system consists of an application installed on a smart phone which enables search and navigation for the location of the desired commodity in the shopping arena. The customer moves to the section, and he picks the desired commodity. The information is stored in the system's database which include the commodity location mapped and the different commodity categories'. The system performance is fairly good and reliable, the greatest challenge in the system functionality is the network reliability and accuracy.

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# CHAPTER ONE: INTRODUCTION

## 1.0 Background

A supermarket, is a large form of the traditional grocery store, a self-service shop offering a wide variety of food and household merchandise, organized into aisle[1]. Supermarket growth has been impressive in Africa since the 1990s and highly concentrated in the different African countries[2]. The rise of supermarkets in Africa started in the mid-1990s and this is transforming the food retail sector. This expansion has led to great transformation in the market structures and economic performance of agri-food systems in continents[3]. The level of supermarket penetration is modelled quantitatively on GDP per capita, income distribution, urbanization, female labour force participation and openness to inward foreign investment [2].

Supermarkets have spread fast in Eastern Africa, already proliferating beyond middle-class big-city markets into smaller towns and poorer areas[4].

In Uganda, the growth of supermarkets can be attributed to the growth in the country's economy and investment climate coupled with increased urbanization[3].

In order to search and locate the desired commodities, some supermarkets in Uganda currently require that the customer moves through the different supermarket aisles in order to locate the required commodities, others employ workers who direct the customer where category of commodities of their interest would be or they just provide notices to locate the different aisles [5]. Most times customers have problems regarding information about the product of their interest on sale and its location resulting into unnecessary waste of time taken to search for the required commodity as the customer traverses the different aisles in search of commodity.

Employment of workers who direct the customer to where the category of commodities of their interest would be also compromises customers' privacy and convenience during shopping.

## 1.2 Overview of Technical areas to cover.

The mode of obtaining the location of desired commodity of interest in supermarkets and navigating to their locations is not convenient hence need for more research and work to be done under indoor commodity of interest location and navigation to enable solving the problem.

### **1.3 Problem Statement**

The customers spend a lot of time in the huge supermarkets trying to locate and identify the exact location of where their desired commodity can be found. At the same time, their privacy and convenience is compromised in cases where they have to inquire from workers in the supermarket to direct them to where the category of commodities of their interest would be. Thus the total time taken by consumers to identify the exact location of the desired commodity is definitely plenty, their privacy and convenience are also compromised.

### **1.4 Objectives**

#### **1.4.1 Main Objectives**

To design and develop a system to enable customers locate commodities of their interest and navigate to their locations in supermarkets.

#### **1.4.2 Specific Objectives**

- i. To identify and analyze the requirements for the design of a system to enable customers locate commodities of their interest and navigate to their locations in supermarkets.
- ii. To design a commodity identification and navigation modules for use in supermarkets.
- iii. To develop a commodity identification and navigation modules for customers' to locate commodities' of their interest and use in supermarkets.
- iv. To test and validate the performance of the system to aid commodity identification and navigation in supermarkets

### **1.5 Justification**

With the advancement in technology, presence of supermarkets that require customers to move around the different aisles in search for commodities of their interest is inappropriate. Inquiring from the supermarket workers for direction of aisles of where the particular commodity of interest is found is also inconvenient and it compromises the customers' convenience and privacy. Hence the need for a System to aid Commodity Identification and Navigation in Supermarkets relying on the prevailing technology.

## **1.6 Scope**

The scope will be limited to developing an application that will enable customers to locate commodities of their interest in the supermarket and avail navigation routes to the identified commodity.

The application will run on smart phones that support any version of the android operating system. The system will be for use in the supermarket to ease the customer's accessibility to the required commodity.

## **1.7 Limitations of the system.**

- The system is supported by only phones with android operating system.
- The system requires internet that relies on the network which is not reliable in Uganda.

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