

**AUTOMATIC SHOPPING TROLLEY FOR COMMODITY LOCATION  
AND PRICE CHECKOUT**

By

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## DECLARATION

I **Kateregga Allan, Reg. No BU/UG/2012/65**, 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.

Signature: .....

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## **APPROVAL**

The undersigned certify that they have read and hereby recommend for acceptance of Busitema University a Project report entitled **AUTOMATIC SHOPPING TROLLEY FOR COMMODITY LOCATION AND PRICE CHECKOUT.**

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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 queue to make payment is definitely plenty. The customer searches for the required commodities through the different aisles to various sections and drop all the products they wish to purchase in the trolley/basket, and then they proceed to the checkout queue for billing. There is also unnecessary time wasted on the billing counters. Therefore, the system developed enables the customer to easily know the location of the commodity, price checkout as well as billing of the commodity. The system consists of the touch screen monitor which displays the location of the desired commodity in the shopping arena. The customer moves to the section, and he picks the commodity which has rfid tags attached on it and drops it into the trolley via the reader, the tag is sent to the central database, the price, name of commodity and cumulative total price are displayed on to the touch screen monitor as more commodities are added. The information is stored in system's database and it is also displayed on the computer at the cashier's desk. If an unwanted product is removed from trolley then that commodity is also deleted from the database.

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## LIST OF ABBREVIATIONS

DBA	Database
MySQL	My Structured Query Language
LCD	Liquid Crystal Display
WI-FI	Wireless Fidelity
SCC	Server Communication Component
UIDC	User Interface and display component
ABIMC	Automatic billing and Inventory management component
PCB	Printed Circuit Board
US	United States
OS	Operating System
ID	Identification
I/O	Input Output
VB	Visual Basic
PC	Personal Computer

# CHAPTER ONE

## 1.0 Introduction

In this chapter there is an overview of the background of the title, the problem statement, main objective, specific objectives, justification, scope and Limitation.

## 1.1 Background

A supermarket, is a large form of the traditional grocery store, is a self-service shop offering a wide variety of food and household merchandise, organized into aisles [1]. Supermarket growth has been impressive in Africa since the 1990s and highly concentrated [2]. The number of supermarkets in Africa varies widely between countries.

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]. Supermarkets have spread fast in Eastern Africa, already proliferating beyond middle-class big-city markets into smaller towns and poorer areas [4]. The growth of supermarkets in Uganda can be attributed to the country's favorable investment climate coupled with increase in the supermarket demand.

In Uganda today, Supermarkets employ shopping baskets and manual shopping trolleys for enabling the customer to store products which they intend to purchase. The customer searches for the required commodities in the different aisles and drop all the products they wish to purchase in the trolley/basket, and then they proceed to the checkout queue for billing. To search and locate the desired commodities, supermarkets employ workers who direct the client where category of commodities of their interest would be or they just provide notices to locate the different aisles. Factors like; urbanization, growth in the middle class and increase in employment of women have greatly contributed to this. Therefore, there is need to provide the faster and improved supermarket services to buyers.

Sometimes customers have problems regarding information about the product on sale and this results into unnecessary waste of time taken to search for the required commodity as the customer traverses the different aisles in search of commodity and also time is wasted

on the billing counters. Therefore continuous improvement is also required in the traditional billing system to improve the quality of shopping experience to the customers.

## **1.2 Problem Statement**

The customers spend a lot of time in the huge supermarkets to locate and identify the exact location where their desired commodity can be found. At the same time the counting of item per item from either the shopping carts or basket done at the counters by cashiers as they need to capture each and every item in the customers' cart or shopping basket for billing consumers also leads to long queue time at the cashier as they wait either for their turn to make payments. Thus the total time taken by consumers to identify the exact location of the desired commodity and queue to make payment is definitely plenty.

## **1.3 Objectives**

### **1.3.1 Main Objectives**

To design a prototype system on a shopping trolley for commodity location and price checkout in supermarkets.

### **1.3.2 Specific Objectives**

- i) To identify and analyze the requirements for the design of a prototype system on a shopping trolley for commodity location and price checkout.
- ii) To design the Commodity Location Module of the prototype system on a shopping trolley for commodity location and price checkout system.
- iii) To develop user interface as the client application.
- iv) To develop a server application as a database system.
- v) To test and validate the performance of client-server application of the prototype system of a shopping trolley.

## **1.4 Justification**

Supermarkets are no longer just niche players for only rich consumers in the cities of the developing countries. This implies the rapid rise of supermarkets in the regions of developing countries in the past five to ten years and has transformed agri-food markets at different rates and depths across regions in developing countries [5]. This implies an increasing number of clients using supermarkets thus increased delays during one's shopping experience. The current methods or means used by consumers to locate the

desired commodity in their shopping experiences within these supermarkets always result to the waste of unnecessary time in search of the required commodity by walking throughout the different aisles.

Some customers may be required to take back some items at the time of payment at the counter in case the billed money is more than the available money customers have which is also time wasting. The above issues need to be addressed for a better shopping experience in Ugandan supermarkets and thus developing the Automatic shopping trolley for commodity location and price checkout system. The system aids the customer to get the shortest route to the desired commodity and also provide the current price of the commodity since it is picked from the master database. Providing the customer with cumulative price as more items are added reduces on the time that would be taken to count item per item at the counter.

### **1.5 Scope**

The system is incorporated on every trolley each having a number and will be limited to items that can fit in the shopping carts.

The system is intended for Ugandan supermarkets which are in a large form of the traditional grocery store, self-service shop offering a wide variety of food, clothing and household products, organized into aisles

The system is intended to be incorporated in Ugandan supermarkets that have standard databases.

The system is scheduled to be completed in the duration of 8 months

### **1.5 Limitations**

The system is subject to the following limitations:

- i) The system is for only items that fit in the shopping trolley.
- ii) Only the items having an attachment of the RFID tags can be able to use this system.
- iii) The information to be displayed on the display is only in the English Language.

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