

**PUBLIC GARBAGE BIN WASTE MONITORING AND ALERT SYSTEM**

**BY**



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A project report submitted to the Department of Computer Engineering in Partial Fulfillment of the Requirements of the Award of a Bachelor's Degree in Computer Engineering of Busitema University.

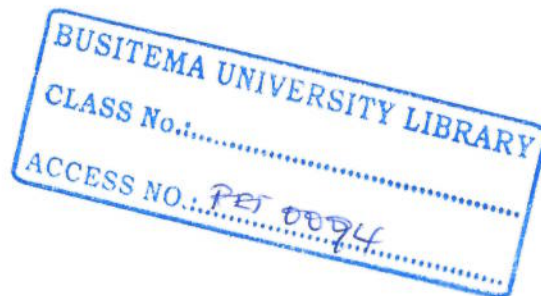
**June, 2016**

## DECLARATION

I NAMWASE ZIPOLA Reg no: BU/UP/2012/331 hereby declare that this project report is my original work except where citation has been made and it has not been presented to any institution of higher learning for any academic award.

Signature .....

Date.....



## APPROVAL

This is to certify that the project report under the title "Public Garbage Bin Waste Monitoring and Alert System" has been done under my supervision and is now ready for examination.

Sign ..... 

Date ..... 

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## **ACKNOWLEDGEMENT**

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MISS NAMWASE

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## **LIST OF ACRONYMS**

<b>CBO</b>	<b>Community Based Organization</b>
<b>CSO</b>	<b>Civil Society organization</b>
<b>GIS</b>	<b>Geographic information system</b>
<b>RF</b>	<b>Radio frequency</b>
<b>RFID</b>	<b>Radio frequency identification</b>
<b>GPS</b>	<b>Global Positioning System</b>
<b>GOU</b>	<b>Government of Uganda</b>
<b>KCC</b>	<b>Kampala City Council</b>
<b>KCCA</b>	<b>Kampala Capital City Authority</b>
<b>LMIC</b>	<b>Low and Medium Income Country</b>
<b>MSW</b>	<b>Municipal Solid Waste</b>
<b>SWM</b>	<b>Solid Waste Management</b>

## ABSTRACT

The growing number of people living in urban areas has led to increased waste generations capacities; the competence of the city managers to regularly collect and dispose waste is declining. Mismanagement of solid wastes in an area exposes the area to natural disasters like outbreak of diseases such as cholera, tuberculosis (TB). This is mainly due to lack of effective communication system between the collecting authorities and people. This project therefore aimed at developing a monitoring system that notifies the authorities when the bin gets full and when it has been emptied. Relevant information regarding the project was got through review of literature, analyzed and user requirements determined. The system was designed using GSM modem, ultrasonic sensors that were used to detect the level of garbage. The database contains the names of the drives, personal information of the drives and location of the bins displayed on the interface.

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## CHAPTER ONE

### INTRODUCTION

This chapter consists of the background, justification, problem statement and objectives of the study

#### 1.1 Background

In Uganda, the rural-urban migration pattern for greater economic and social opportunities has compounded the waste generation and disposal challenges of these towns like Kampala, Tororo and Jinja. As the population of towns increase, the waste generation capacities too increase while the competence of the city managers to regularly collect and dispose waste declines. Mismanagement of solid wastes in an area predisposes the area to natural disasters, as a result of climate change which result from emission of dangerous gases to the atmosphere.

Most local governments in Uganda do not have a well-structured refuse collection and disposal systems to handle the collection of wastes.

KCCA (KCC then) spent a substantial amount of money to the tune of shs.10.4 billion on garbage collection, transportation and disposal in a period of five years from 2002 to 2007 which average to Shs.2.08 billion annually. Despite the expenditure, the city remains choked with uncollected garbage. Out of 1200-1500 tons of garbage estimated to be generated per day, only 400-500 tons was found to be collected giving a collection efficient of approximately 40% according to SWMS, of December, 2002. This implies that 60% of the garbage generated daily is not collected and disposed which has resulted into a public nuisance. The presence of un-collected garbage all over the city puts the lives of dwellers at the risk of environmental and human health related problems such as diseases, water pollution and air pollution in form of offensive smell. The audit sought to ascertain why KCCA and the division have failed to establish an efficient garbage collection, transportation and disposal system to solve the problem of uncollected garbage in the city and to make recommendation for improvement

This report therefore, served to introduce a low cost system that notifies the authorities of filled garbage containers such that they are picked up without need to survey areas for

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