



**UNIVERSITY OF NAIROBI
SCHOOL OF COMPUTING AND INFORMATICS**

**EARLY WARNING DISEASE
RESPONSE SYSTEMS**

BY

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P56/P/7954/2002**

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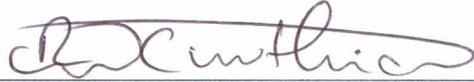
DECLARATION

I hereby declare that this is my original work and has not been presented by anyone, anywhere else for any award.

ROBERT MUIRURI KINUTHIA

P/56/P/7954/02

Signature:



Date:

23 - August 2011

This research project has been submitted for examination with my approval as the University Supervisor.

Mr. Christopher Moturi
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Date:

6 Sept 2011

ABSTRACT

Infectious diseases are the leading causes of morbidity and mortality in Kenya. Identifying infectious disease outbreaks in their early stages is an important task, both for governments and international organizations working in the health sector. In an effort to alleviate these epidemics in a world wide scale the WHO in partnership with various countries identified a number of diseases that need to be notified to respective authorities when they occur due to their ease of spreading and catastrophic nature. These diseases are referred to as notifiable diseases.

The purpose of this study was to develop an understanding of the notifiable disease reporting system in Kenya and study factors that influence notifiable disease reporting. Specifically the research looks at professional qualification of people participating in disease surveillance, the impact of computers and mobile technology on reporting of notifiable diseases. A further aim was to develop an understanding of the perceptions and attitudes of all the people who participate in notification of diseases. The study targeted medical personnel who presently participate in the reporting and analysis of notifiable disease data in Nairobi metropolitan. The research also looked at previous studies covering issues about notifiable disease reporting and how technology has been applied in health sector.

The research identified that the present disease surveillance system is paper based and takes around 10 days for notifiable disease information to reach the national office. Ten days are many for any infectious disease noting that most of them can kill in less than 48 hours. The research revealed that various benefits can be tapped by introducing the power of computer and mobile communications to improve the disease reporting and analysis process. In comparison mobile systems come out as the best in application for health services because of their low cost, widespread use and minimum training required.

The conclusions of the study were used to develop a software prototype that uses mobile technology to collect notifiable disease data and analyse it using statistical methods to recognize notifiable disease outbreaks. The software designed collects data about notifiable diseases in Kenya through mobile communication devices and uses statistical tools to recognise increase of diseases beyond the norm. This is done without undermining the protection of individuals' privacy and confidentiality rights about their medical data.