

MAKERERE



UNIVERSITY

**END USER DESIGN AND IMPLEMENTATION OF A FLEET MAINTENANCE
MANAGEMENT SYSTEM FOR UGANDA NATIONAL FORESTRY AUTHORITY**

BY

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DECLARATION

This study is original work done by the researcher and has not been submitted for any other degree award to any other University before.

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APPROVALS

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DEDICATION

I would like to dedicate this dissertation to my dear wife, Beatrice Amuron Okanya, and to all my children Patricia, Precious, Beatrice, Boniface, Christine and Esther who endured loneliness and boredom during the period when I was busy undertaking the study.

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LIST OF ABBREVIATIONS

BEngAPE	- Bachelor of Engineering in Automotive and Power Engineering
CSS	- Cascading Style Sheets
DFD	- Data Flow Diagram
EMAIL	- Electronic Mail
HTML	- Hyper Text Markup Language
MHZ	- Mega Hertz
MySQL	- My Structured Query Language
NFA	- National Forestry Authority
PHP	- Hypertext Pre-processor
SDLC	- System Development Life cycle
SQL	- Structured Query Language
URL	- Universal Resource Locator
XML	- Extensible Markup Language
BOD	- Board of Directors

ABSTRACT

Lack of timely information on the condition of fleet coupled with an inefficient process for maintenance planning and poor control of fleet that need maintenance, contribute to increased fleet downtime thereby increasing maintenance costs and reducing fleet productivity. The prevailing manual fleet maintenance management system at the National Forestry Authority uses checklist administration through a manual laborious paperwork process, which is prone to human errors and omissions, process delays, and labour-intensive handling. The aim of the study was to develop a prototype computerized fleet maintenance management system for the National Forestry Authority. A comprehensive review of information systems development eras and system development life cycle models was done in order to give the researcher a clear perspective and criteria for the choice of model to use during system design for the project. Data was also collected from existing documents of the manual fleet maintenance management system and prospective end users who included drivers, suppliers/service providers and management staff. System implementation was done using the waterfall model. The developed computerized system operates on Oracle database while the programming was done using Java, XML and Visual Basic programming languages. System testing was performed using the structured query language to run queries to the database and compare the results with feedback expectations. The system was found to be successful at resolving the most pertinent issues in the transport unit at the National Forestry Authority. It is concluded that while the waterfall model runs successfully on computers with high memory, it may be prone to updating inability since each phase must be frozen before moving to the next phase.

The study recommends further refinement to improve system efficiency to a commercialised version. Further research is recommended using agile SDLCs like XP and RUP which are user driven, architecture-centric, iterative and incremental.

Key words: Agile, Database Management Systems, SDLC, SQL, Waterfall Model.