



**BUSITEMA
UNIVERSITY**
Pursuing Excellence

FACULTY OF ENGINEERING AND TECHNOLOGY

DEPARTMENT OF MINING ENGINEERING

FINAL YEAR PROJECT REPORT

**MODELLING AND OPTIMIZATION OF THE PERFORMANCE OF A GOLD KACHA
USING DESIGN EXPERT**

CASE STUDY; TIIRA GOLD MINES

By

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ABSTRACT

The study explores the modelling and optimization of the performance of the gold kacha – a centrifugal concentrator that is used for gold recovery. The goal of this research is to optimize critical operational parameters in order to increase the gold kacha's efficiency and recovery rates. In order to create a predictive model of the gold kacha, a series of controlled experiments are carried out using the response surface methodology. The development of the solid experimental design, data analysis and optimal determination are made easier by the design expert software. Under ideal circumstances, the results show considerable gains in processing efficiency and gold recovery. In order to maximize gold recovery utilizing the gold kacha, mining operations can benefit greatly from the insightful and useful recommendations provided by this research which will help the industry adopt more profitable and useful methods.

DECLARATION

I AINYO JOYCE, hereby declare that this report was written by me and it is a true picture of what transpired during the proposal development time. I affirm that the research conducted for this research was carried diligently employing reliable sources and appropriate methodologies. The external sources used have been appropriately cited, referenced, and credited.

This report has not been submitted anywhere in acquisition of any academic award by any individual or learning institution.

Date 23/10/2024

Signature..... *Ainyo Joyce*

APPROVAL

I AINYO JOYCE, submit this report of my final year project to the faculty of engineering in the department of mining and water resources engineering for the examinations with approval of my supervisor

Mr Kidega Richard.

Signature:.....

Date:.....

DEDICATION

I dedicate this report this report to family mambbers, friends and relatives

ACKNOWLEDGEMENT

I take this opportunity to thank the almighty God for the good health and the ability to research and gather information in this report. I thank my supervisors for time, support and advice provided to me during my research.

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