DESIGN, FABRICATION, AND PERFORMANCE EVALUATION OF GSM (GLOBAL SYSTEM FOR MOBILE COMMUNICATIONS) BASED TILAPIA (*Oreochromis niloticus*) FEEDER

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An Undergraduate Thesis Submitted to the Faculty of the Department of Agricultural and Biosystems Engineering, College of Engineering, Central Luzon State University, Science City of Muñoz, Nueva Ecija, Philippines
in Partial Fulfillment of the Requirements
for the Degree of

BACHELOR OF SCIENCE IN AGRICULTURAL AND BIOSYSTEMS ENGINEERING
(AB Machinery and Power Engineering)

JULY 2024

ACCEPTANCE SHEET

This undergraduate thesis entitled **"DESIGN, FABRICATION AND PERFORMANCE EVALUATION OF GSM (Global System for Mobile Communications) BASED TILAPIA (*Oreochromis niloticus*) FEEDER"** prepared and submitted by **CHRIST KING A. CALSO** and **PAUL JUSTINE V. SABADO**, in partial fulfillment of the requirements for the degree of **BACHELOR OF SCIENCE IN AGRICULTURAL AND BIOSYSTEMS ENGINEERING (AB Machinery and Power Engineering)**, is hereby accepted:

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BIOGRAPHICAL SKETCH

The researcher Paul Justine V. Sabado was born on January 1, 2000 in Magdalena, Cabatuan, Isabela. He is the fourth child among the five children of Mr. Patricio and Mrs. Bella Sabado. His educational journey began at Cabatuan West Central School, where he completed his primary education, laying the foundation for his academic pursuits. He continued his studies in junior high school at Doña Aurora National High School. For senior high school, he graduated with honors under the STEM (Science and Technology, Engineering and Mathematics) strand of Aurora Senior High School. Currently, he is pursuing the Bachelor of Science in Agricultural and Biosystems Engineering at Central Luzon State University.

The researcher Christ King A. Calso was born on December 11, 1999 in Marikina City. He is the youngest child of Mr. Mario and Mrs. Merlita A. Calso. He graduated at Bibiclat Elementary School for his primary education. He finished his junior and senior high school under the STEM (Science and Technology, Engineering and Mathematics) strand at Dr. Ramon De Santos National High School. He used to be a table tennis varsity during his 11th grade and received a best research paper award on his junior high completion. In senior high school, he graduated with honors. He took his bachelor's degree in Agricultural and Biosystems Engineering at Central Luzon State University

ACKNOWLEDGEMENT

We would like to extend our sincere appreciation to the following people for their tremendous assistance, boundless tolerance, and unfathomable care in seeing this project through to completion.

First and foremost, we are grateful to our All-Powerful God for hearing our prayers, providing us with strength and insight, and showering us with endless blessings.

To our thesis adviser: **Engr. May A. Cabral**, we appreciate you being our thesis adviser and your great advice and assistance. We appreciate your commitment, as it made the journey easier with your knowledge and support. We extend our sincere gratitude for your invaluable contributions and guidance throughout the development of our thesis.

To the members of the Advisory Committee: **Dr. Elmar M. Villota** and **Engr. Novalyn Delos Santos**, your knowledge and perceptive observations have been really helpful in guiding our study. Your dedication to quality work and readiness to impart your expertise have been invaluable to our academic endeavors.

We appreciate all of your hard work, attention, and insightful criticism. We sincerely thank you for contributing your combined expertise to our project.

To our family and friends, we would like to express our sincere gratitude for your continuous support during the difficult process of performing our study. We much appreciated your patience, understanding, and support as we worked our way through the challenges of academic research. This achievement represents both yours and ours, and we are appreciative of our strong support system. This adventure is significant and unforgettable because of your love and encouragement.

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ABSTRACT

SABADO, PAUL JUSTINE V., CALSO, CHRIST KING A., Department of Agricultural and Biosystems Engineering, College of Engineering, Central Luzon State University, Science City of Muñoz, Nueva Ecija, Philippines, **JULY 2024, DESIGN, FABRICATION, AND PERFORMANCE EVALUATION OF GSM (GLOBAL SYSTEM FOR MOBILE COMMUNICATIONS) BASED TILAPIA (*Oreochromis niloticus*) FEEDER**

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The study was conducted to design, fabricate, and evaluate the performance of an automated fish feeder machine for small to medium scale tilapia fish production. The machine with overall dimension of 69cm x 69cm x 248cm (L x W x H) was designed using the standard feed requirement practiced by the Bureau of Fisheries and Aquatic Resources (BFAR). Locally available materials and fabrication technologies were utilized. Performance evaluation revealed that the machine has a feeding capacity of 140.175 kg/h, discharge rate of 0.038kg/s and efficiency of 97.06% respectively. The results of statistical analysis revealed that the machine with 100-cm height has the spreading efficiency of 97.01% with a distribution area of 103432.75 cm^2. However, the study revealed that there was no significant difference on the machine's dispense efficiency and discharge rate across height variations, respectively. Based on the cost analysis of the study, the investment cost of the machine was Php 29,217, with a break-even point at 259.19 kg, a return on investment of 39.36%, and a payback period of 2.54 years.

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