UNIVERSITI TEKNOLOGI MARA

DESIGN AND FABRICATION OF AUTOMATC DURIAN PEELING MACHINE

ALIFF AMANI BIN AIMAN MIRZA ALBERT

Dissertation submitted in partial fulfillment
of the requirements for the degree of
Diploma
(Mechanical Engineering)

College of Engineering

Feb 2025

ABSTRACT

The manual process of durian splitting presents major hurdles in terms of labor intensity and time consumption Traditional processes need specialized work and extensive physical exertion, resulting in inefficiencies and safety risks during the process.

The issue lies in the method of peeling durian. The common method of peeling durian is by tearing it apart with bare hands or using a knife. However, the sharp thorns on its surface impose quite a risk. To conclude this point, this method is not the safest as it might cause injuries when doing things conventionally.

Furthermore, as demands for durians develop, there is an urgent need for solutions to simplify the splitting process while maintaining product quality and worker safety Existing scraping machines frequently lack the sophistication and automation necessary to satisfy these changing expectations, failing in terms of efficiency, dependability, and flexibility. [3][9]

ACKNOWLEDGEMENT

This dissertation would not have been possible without the support and encouragement of many people. First, I would like to express my gratitude to my supervisor, sir Ahmad Faidzal, whose guidance, and patience throughout the entire research process. A special thank you goes to my family and friends for their endless support, understanding, and love. I am also grateful to my friends, who encouraged me during the ever so challenging moments.

To everyone who contributed to this journey, be it through guidance, support, or friendship, I am deeply grateful for all that you have done.

TABLE OF CONTENTS

CHAPTER ONE
INTRODUCTION

1.1 Background of Study

The durian's thick, custard-like body and nuanced flavors have mesmerized palates. Its notoriously distinct smell, however, has presented a tremendous obstacle, discouraging many from enjoying its delicious flavor. Durians have always been one of the unique things that we are proud about our country. Not only the locals enjoy durians, it has also managed to captivate the heart of the foreigners. Based on observations done, it seems quite apparent as to what the problem or hurdle that durian sellers seem to face is the inefficiency of peeling a durian. Not only does it require quite the effort, it could also risk injuries to oneself. Luckily, the fabrication of the Durian Splitter Project appears to be the answer, guaranteeing an easy way to extract the delicious treasure stored inside. In this project, the fabricating and designing the durian splitter will be conducted.

For the designing process, a good mechanical performance, suitable material selection, and ergonomic design will be kept in view during development so that there is no doubt about the design and idea[17]. The product will be operated automatically and will be designed to cater the user’s need. Thorough research has been done during the consideration of the design to produce a user-friendly product. Careful selection of materials will be used for the fabrication of this product to ensure the structural safety and durability purposes. For instance, a lightweight and durable material could be used to make improve the product in terms of functionality. The fabrication process of this product involves several of the many skills in engineering such as welding, cutting process, shearing machine operation as well as bending process. All in all, the ultimate goal of the project is to develop a durian splitting machine that combines affordability and functionality, while showcasing distinct attributes that heightens the user’s experience.[1][2][3]