UNIVERSITI TEKNOLOGI MARA

DESIGN AND FABRICATION OF A SELF-BALANCING DEVICE FOR FOOD DELIVERY

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

College of Engineering

Feb 2023

ABSTRACT

Food delivery is starting to become common in the past 2-3 years due to the pandemic. This is also influenced by the Grab application in Malaysia which introduced jobs such as Grab drivers and Grab delivery riders. The Grab delivery riders are the one's responsible to deliver food to customers that requested a food delivery through the Grab application. Accidents during food delivery tend to happen where the food & beverage inside the delivery are often spilled and destroyed because it is not anchored properly and loses balance when the rider is weaving their bike or when it is a rushed delivery. The self-balancing device for food delivery is the solution for the problem as it counters the loss of balance to maintain the positioning of the food inside the delivery bag.

ACKNOWLEDGEMENT

Firstly, I would like to say Alhamdulillah as the journey for my Diploma in Mechanical Engineering is about to end. It has been a tough road to cross as it started during the pandemic.

Secondly, my gratitude and thanks go to my supervisor, Miss.Nur Kamarliah Kamardin for guiding me throughout the whole project.

Lastly, this dissertation is dedicated to my father and mother, the road that they have planned for me in continuing my studies. This piece of victory is dedicated to both of you. Alhamdulillah.

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2.1 Introduction

A self-balancing device also known as gimbals or stabilizers have been used on boats and yachts to prevent it from tipping over on rough waters [5]. There has been no real application of a self-balancing device for food deliveries except for concepts. A self-balancing food carrier has been created by designers, Min Ju Kim and Hyeonji Roh [6]. From figure 2.1, the Korean-based designers has created a concept design of a delivery scooter for that is equipped with a 3-axis stabilizer in 2021 as the pandemic has boosted the demands for food delivery [7]. Figure 2.2 shows the design of the self-balancing food carrier utilized the principle of the gyroscope system which is not affected by the inclination of the vehicle and maintains a horizontal position to minimize shaking [8].

Figure 2.1: Concept Design

Figure 2.2: Maintaining a Horizontal Position