UNIVERSITI TEKNOLOGI MARA

DESIGN AND FABRICATION OF A FOOD WASTE COMPOSTER

AHMAD IKMAL BIN KAMALI

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ABSTRACT

A food waste composter is a machine intended to effectively break down organic food waste into compost by controlled aerobic decomposition. Unlike conventional approaches of food waste disposal such landfilling or incineration, which relate to environmental issues. This research seeks to improve a current composter machine to attract more customer to use it compare throw it into trash bin. The Composter's design is focusing economical, portability, odourless, and noise reduction, as it being redesigned to seek effectively turn organic food waste into compost. Utilising SolidWorks for design and later fabricate, the project aims for a proof-of-concept prototype satisfying high efficiency criteria and financial viability.

The main objectives are creating a composter that satisfies user needs, by using market research to guide design decisions, and starting a development process that repeatedly improves the product design. The project's importance rests in its ability to create excellent compost, therefore improving plant health and lowering reliance on synthetic fertilisers. By guiding organic waste towards sustainable method, it resulted related environmental effects being reduced as composting food waste is better than conventional method to get rid of it. Anticipated results include the creation of excellent compost fit for use in gardens and plant nourishment by including effective composting techniques such as Bokashi to speed the process. The prototype highlights its possible wider acceptance in waste management techniques since it seeks to show lower environmental effect than conventional garbage disposal techniques. In conclusion, this project addresses significant waste management and environmental problems by supporting sustainable behaviours through composting methods, therefore strengthening its natural environment.

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CHAPTER ONE INTRODUCTION

1.1 Background of Study

Food waste is a worldwide issue that calls immediate attention since it has strong negative effects on food security, the environment, and the economy. [1]. Other than that, Food waste is also a major global concern in landfill management. The fundamental reason for most problems with landfills like bad odour, toxic leachate, greenhouse gas emission, and vermin infestation is the great volume of food waste produced. Although food waste is as important as municipal solid waste, the situation is such that municipal solid waste management systems in Malaysia are likewise rather inadequately managed.[2].

Malaysia continued to produce an estimated 37,890 tonnes of garbage each day, with food waste accounting for 16,687 tonnes in 2019. This number conveys the impression that Malaysians are still not attempting to reduce waste, as the increased amount of waste may represent the quantity purchased by Malaysians. This dilemma arises because it has been customary to buy products that cannot be recycled or reused without feeling guilty about the environment [3]. As a result, the rising volume of food waste in Malaysia in recent years has created a slew of environmental issues, hurting the country's solid waste management framework. Currently, the government is limited to numerous possibilities for food waste disposal besides the standard landfill and incineration operations [4].

Conventional methods for dealing with food waste, including as landfilling and incineration, have long been the most popular, providing a straightforward and cost-effective solution. Most of the time, these approaches are unsustainable because they cause additional environmental pollution, such as greenhouse gas (GHG) emissions and leachate contamination, which leads to groundwater contamination. Other concerns with landfills include the lengthy process of self-composting on the landfill site and the fact that most landfills in Malaysia are practically full [5]. Composting is an excellent way to manage food waste. If food waste from families can be decreased, the transportation process to landfills can be reduced, resulting in lower costs and less waste in landfills [6].

The aim of this project is to enhance the current composter machine which can alleviate or solve waste management problem. This machine's design also seeks to