

**UNIVERSITI TEKNOLOGI MARA**

**DEVELOPMENT OF AN AUTOMATED  
ROTATING BIN**

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## **ABSTRACT**

The "Automated Rotating Recycling Bin" is a smart bin can that automatically rotates to the correct compartment based on the type of waste material selected by the user. Its main objective is to simplify the waste sorting process, making recycling more efficient and user-friendly. However, it may have limitations such as the need for accurate user input, potential mechanical failures, and higher costs compared to traditional bins. The design process involves identifying different waste materials, developing a sensor or user interface to detect the material type, and creating a mechanism to rotate the bin to the correct compartment. Expected results include improved recycling rates, reduced contamination of recyclable materials, and increased convenience for users, ultimately contributing to better waste management practices.

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# **CHAPTER ONE**

## **INTRODUCTION**

### **1.1 Background of Study**

An "Automated Rotating Recycling Bin" is a smart waste management system designed to help users sort recyclables more efficiently. This system consists of multiple compartments for different types of materials, such as plastics, papers, glasses, and cans. Users manually select the type of material they are disposing of using a control panel or a set of buttons. Once the material is chosen, the bin rotates and opens the appropriate compartment to deposit the waste correctly. This automation assists users in ensuring that materials are sorted accurately and efficiently.

Without such an automated system, recycling relies heavily on individuals to correctly sort their waste, which often leads to contamination. Non-recyclable items are frequently mixed with recyclables, making it difficult to process and recycle materials effectively. Incorrect sorting can result in recyclable materials being sent to landfills, wasting resources and increasing environmental pollution. Additionally, the manual sorting process is time-consuming and labour-intensive, requiring more human resources and increasing the overall cost of recycling operations.

To address these problems without an automated system, several steps can be taken. Public education campaigns can raise awareness about proper recycling practices, teaching people how to sort their waste correctly. Clear and detailed label on recycling bins can help guide individuals in disposing of their waste properly. Increased access to conveniently located recycling bins can also encourage proper sorting. Additionally, implementing stricter regulations and incentives for recycling can motivate individuals and businesses to adhere to correct waste management practices. Manual sorting facilities can be enhanced with better training and tools to improve sorting efficiency and accuracy.