

UNIVERSITI TEKNOLOGI MARA

**DESIGN AND DEVELOPMENT OF
AUTOMATIC COIN SORTING**

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ABSTRACT

This study investigates the implementation of automatic coin separation as a pragmatic solution to the inefficiencies encountered in manual coin sorting processes. In the introduction, the significance of streamlined coin handling in diverse industries is underscored, alongside the drawbacks of conventional manual sorting techniques and the cost implications of automated alternatives. The problem statement elucidates the pressing need for an easy and economical coin sorting system capable of enhancing operational efficiency without relying on separating one by one. The objective of this research is to conceive, develop, and deploy an automatic coin separation mechanism engineered to accurately categorize coins by denomination with minimal human intervention. Methodologies encompass the iterative design and prototyping of mechanical sorting mechanisms, followed by rigorous testing using a comprehensive array of coin types and denominations. Leveraging principles of mechanics such as gravity, inertia, and friction, the proposed system is meticulously engineered to efficiently segregate coins into distinct categories based on size, weight, and other distinguishing features. The expected result is the emergence of a robust and efficient coin sorting infrastructure poised to streamline processing times, reduce error margins, and curtail operational overheads compared to both manual and automated methodologies. By offering a practical and cost-effective alternative, the automatic coin separation system holds promise for revolutionizing coin handling processes across industries, heralding a new era of efficiency and reliability in currency management operations.

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CHAPTER ONE

INTRODUCTION

1.1 Background of Study

Automated coin sorting has been an essential part of managing currency in different sectors like retail, banking, and vending for a long time. Previously, labor-intensive manual sorting methods were commonly used, which were inefficient and prone to errors. These techniques included visually examining and sorting by hand, resulting in extended processing durations and higher operational expenses. Despite the benefits of automated coin sorting machines, many smaller businesses and organizations with limited budgets were unable to access them due to the high costs and maintenance they required.

The development of mechanical coin sorting has seen the rise of new solutions that aim to streamline the sorting process and reduce the need for advanced automation. One such approach involves the utilization of mechanical components such as coin slot with diverters systems. These systems feature slotted trays or chutes where coins are manually inserted, with strategically placed diverters guiding each coin to its designated slot based on size and denomination. By leveraging mechanical principles such as gravity and barriers, these systems facilitate efficient and accurate coin sorting with minimal user intervention.

Progress in materials, manufacturing methods, and ergonomic design principles has also played a role in advancing and perfecting mechanical coin separation systems. Modern versions focus on being long-lasting, dependable, and easy to maintain, making them a good fit for use in a variety of coin-handling settings. Additionally, their ease of use and cost-effectiveness make them widely available, allowing businesses of any size to improve their coin management procedures without spending a lot of money.

Therefore, the automated sorting of coins is a notable progression in technology for managing currency, providing a cost-effective and efficient option compared to manual and automated sorting processes. Its extensive use in various sectors highlights its significance in simplifying coin handling procedures and enhancing overall operational effectiveness.