

UNIVERSITI TEKNOLOGI MARA

**DESIGN AND FABRICATION OF
MULTIPURPOSE CART-LADDER**

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ABSTRACT

This project presents the design and development of a multipurpose cart-ladder with a built-in cloth hanger, an innovative solution that combines versatility and efficiency in a compact, multi-functional unit. The problem is the needs of different type of tools to accomplish a certain work can reduce the efficiency of the works and convenience of the work. The use of conventional cart is needed to carry all of the required tools such as the cordless drills and a ladder to do household maintenance. At the same time, the tools used up a lot of space to store when not in use as household maintenance is not something one do in a daily basis. The objective of this project is to develop a tool that eliminate the need of separate cart and ladder as both of it is the heaviest and largest tools of all. The tool is also use in other household task which is as a cloth hanger when not in use. Result shows that the multipurpose cart-ladder helped to improve the productivity of the work and solved the storage problem when it not in use.

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CHAPTER ONE

INTRODUCTION

1.1 Background of Study

Mass production and service in industry have placed a burden of manual material handling on workers. To reduce the problem, management has provided manual vehicles, such as carts, trucks, and wheelbarrows. The use of manual vehicles, cart in particular, is essential to increase the efficiency of the work and lower the risk of any related risk of injuries to the workers[1,2].

Overhead work is very prevalent in almost any occupational setting. Picking apples, stocking store shelves, operating valves in chemical plants, threading strip material through the rollers of a tower accumulator or even performing maintenance on household equipment, changing light bulbs are examples. Wherever it is performed, overhead work often requires elevation of the people. There are literally dozens of ways to reach elevated place, ranging from portable ladders, to fixed platforms, to boom lifts and other vehicle-mounted platforms[3].

The idea of multipurpose cart-ladder is a versatile, multi-functional tool that combines the features of a cart and a ladder, offering users, a convenient and space-saving solution for various tasks.

Combining a cart, a ladder and a cloth hanger into a single unit has its roots in the need for efficiency and convenience in handling materials and accessing elevated areas also reduce the waste of space needed to store when not in use. The multipurpose cart-ladder can be a convenience option for people who live in small space house as it is convertible to fulfil the duty for cloth hanger. These functions eliminated the need of a single cloth hanger. Traditional carts and ladders each serve distinct purposes, but their separate use can be inconvenient, especially in term of storing space as the size of both tools bulky and heavy in weight. The idea of integrating these functionalities led to the development of the multipurpose cart-ladder with cloth hanger, which offers a compact and versatile solution for users mainly in household use.