

Final Project 1

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OPTIMIZING PPE INVENTORY MANAGEMENT IN POWER PLANTS

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1. Chapter 1: Introduction

1.1. Research Background

The operations in the sector of power generation industry involves workers exposure to high-risk environments such as, high- voltage electricity, chemicals, toxic gases and heavy machinery. This hazardous environment leads the country authorities to enforce safety and compliance standards to limit the accidents in the workplace. The occupational safety and health administration (OSHA) ensures safe and healthy working conditions for the workers by setting a non-negotiable standard, including providing personal protective equipment (PPE) which is last defense line against injuries [1]. In order to provide the PPE for the workers some companies rely on reactive procurement systems where they either order the equipment after the accidents accours or overstocking the warehouse regularly which increases the costs and leads to material waste [2]. This study aims to implement, evaluate and optimize inventory control methods for PPE management at a power plant to reduce costs and accidents.

1.2. Research Problem

Many power plants and factories maintain traditional inventory models where it provides a certain amount of inventory stocks each month without making track of what was used and what is needed [3]. PPE comes in deferent sizes and hazard-ratings where it makes it difficult to track, and many components have shelf lives where it can be overdue and cause waste and additional costs. The main challenge is to create a tracking and ordering system model that guarantee availability of the PPE all the time and provide better logistic communications.

1.2.1. Theoretical Gaps

The main problem in power plants is the lack of inventory management systems that provide tracking of the equipment availability and expiry dates. This traditional system is not synced where the inventory must be updated manually from the supervisor.

1.2.2. Practical Gaps

The reliance on the traditional method of manual inventory keeping prevents the introduction of a new more efficient method of stock upkeep since it is the standard throughout all powerplants of the company.

In addition, the lack of effective communication between employees and inventory managers makes it difficult to provide appropriate feedback on the traditional stocking method.

1.3. Research Significance

The aim of this study is to minimize safety hazards associated with lack of PPE inventory, as well as lowering the expenses and waste produced due to expired inventory and overstocking.

1.3.1. At the theoretical level

Implementing a digital automatic system for inventory management would greatly decrease the risk of injury due to PPE shortage or expired equipment, in addition, it would increase the stocking efficiency with automatic updates of available inventory and alerts of any PPE shortage.

1.3.2. At the practical level

The proposed method would be easy to implement in all company powerplants due to its ease of use and simple user-friendly interface.

The automated updates of available PPE stock would save time on inventory monitoring, as well as provide alerts for specific stock shortages so it could be remedied immediately.

1.4. Research Questions

- How do we decrease expenses on unnecessary inventory?
- How do we eliminate the risks arising from PPE shortage?
- How can we improve PPE inventory logistics?

1.5. Research Objectives

- To provide a new and improved method of inventory management.
- To decrease inventory waste and stock expiry.
- To increase the efficiency of inventory and stock monitoring.
- To provide user-friendly communication tool.
- To maintain safety standards throughout the power plant.

1.6. Research Hypotheses

1.7. Research Model

1.8. Research Methodology

1.9. Scope of The Study

1.10. The Suggested Project Structure

2.Chapter 2: Literature Review

2.1. Introduction

Brief introduction for the chapter

2.2. The independent variable

2.3. The dependent variable

2.4. The relationship between the independent and the dependent variables

2.5. Conclusion

References

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