**PROPOSAL FOR AI-INTEGRATED WAREHOUSE MANAGEMENT SYSTEM**

Prepared For

Susan Burton

Communications Instructor

TCOM-600 – Business Technology Communications

Prepared by

Nimmy Hubald Bastian and

Syed Nayeem Ahmed

Submitted:

31 October 2023

Table of Contents

[1 Introduction 1](#_Toc149669119)

[2 Current System Challenges 1](#_Toc149669120)

[2.1 Inventory Shrinkage 1](#_Toc149669121)

[2.2 Delay in Order Processing 1](#_Toc149669122)

[2.3 Lack of Real-Time Visibility 2](#_Toc149669123)

[2.4 Peak-time Difficulties 2](#_Toc149669124)

[2.5 Communication Problem 2](#_Toc149669125)

[2.6 Legal Complications 2](#_Toc149669126)

[3 Benefits of AI Integrated System 2](#_Toc149669127)

[3.1 AI-Powered Forecasting 2](#_Toc149669128)

[3.2 Automated Order Fulfillment 2](#_Toc149669129)

[3.3 Automate and Streamline Overall Process 2](#_Toc149669130)

[3.4 Real-time Inventory Management 2](#_Toc149669131)

[3.5 Quality Control 2](#_Toc149669132)

[3.6 Data Analytics and Reporting 3](#_Toc149669133)

[3.7 AI-Enhanced Internal Communication/Customer Support 3](#_Toc149669134)

[3.8 Scalability and Integration 3](#_Toc149669135)

[3.9 Long-term Profitability/ROI 3](#_Toc149669136)

[4 Potential Concerns 3](#_Toc149669137)

[4.1 Current Server Overload 3](#_Toc149669138)

[4.2 High Initial Cost 3](#_Toc149669139)

[4.3 Data Security and Privacy 3](#_Toc149669140)

[5 Other Alternatives/Solutions 3](#_Toc149669141)

[5.1 Buying a Third-Party WMS 3](#_Toc149669142)

[5.2 Hiring More Staff 4](#_Toc149669143)

[6 Budget & Timeline 4](#_Toc149669144)

[7 Recommendation & Request for Approval 4](#_Toc149669145)

**Proposal for AI-integrated Warehouse Management System**

# Introduction

The purpose of the report is to seek approval from the CEO to implement a new Warehouse Management System (WMS) integrated with AI on existing Samsung warehouses located in UAE.

Samsung is one of the world’s largest manufacturers of electronic devices. Samsung specializes in producing a wide variety of consumer and industry [electronics](https://www.britannica.com/technology/electronics), including home [appliances](https://www.britannica.com/technology/home-appliance), mobile phones, memory chips, and [integrated](https://www.merriam-webster.com/dictionary/integrated) systems. In UAE, Samsung has multiple large warehouses that store and distribute Samsung products inside and outside of the country (including the Mena region). The current manual warehouse process is prolonged, inefficient, and incapable of handling a large volume of transactions.

The Warehouse Management System is a key part of our business as it involves the movement and storage of stock within the warehouse and processing the associated transactions including shipping, receiving, putting away, and picking up by the retailers. The efficiency and accuracy of our warehouse operation are the crucial part that helps to increase profitability and to meet the customer (retailer) demands. This project proposal outlines how the new WMS integrated with AI can revolutionize the current manual warehouse management process and increase efficiency and accuracy.

We want the company to implement a new warehouse management system integrated with AI to automate the current warehouse operation to make it fast, accurate and efficient.

# Current System Challenges

With the current manual warehouse management system, we are facing many constraints which are mentioned below:

## Inventory Shrinkage

Manual inventory management and tracking systems result in inventory shrinkage due to poor management and theft of products from the warehouse. It always leads to stockouts, and we are not able to meet the customer requirements on time.

## Delay in Order Processing

Warehouse management staff must spend a lot of time on manual tracking, data entry, and paperwork which causes delays in order processing and fulfillment. The manual system causes a lot of errors including miscounts, misplacements, and incorrect order picking which ultimately results in inefficient and slow operations.

## Lack of Real-Time Visibility

It also lacks real-time visibility of product stocks and their order status.

## Peak-time Difficulties

The current system finds it difficult to keep up with the increased orders during peak times. As a result, the management is forced to hire new staff.

## Communication Problem

Communication with the warehouse employees is another challenge in the manual system.

## Legal Complications

Challenges in final report generation can lead to legal complications.

# Benefits of AI Integrated System

Our proposed solution includes the following key elements:

## AI-Powered Forecasting

Implementing AI to predict and maintain inventory levels ensures the products are in stock and reduces the cost associated with excess inventory. It will provide accurate and speedy calculations for storage space. All the storage units (aisles) will be automatically generated along with SKUs (Stock-Keeping Units). The AI system also predicts the space availability and storage of each item.

## Automated Order Fulfillment

AI-driven order fulfillment streamlines the order fulfillment process and thereby reduces processing times and errors.

## Automate and Streamline Overall Process

The new warehouse system will improve and streamline the current warehouse process by automating the storage, retrieval, and inventory management process. It will be time efficient.

## Real-time Inventory Management

Implementing RFID and IoT sensors will provide real-time tracking of inventory. AI algorithms will automatically trigger restocking orders when inventory levels fall below predefined thresholds. AI Algorithms for product storage and retrieval give real-time visibility of inventory.

## Quality Control

The new system will use computer vision and machine learning to inspect and identify defects in products during the receiving and packing processes, which ultimately will reduce the occurrence of damaged or incorrect shipments. Computer vision will be used for the identification of the product and its dimensions and for computing the area used by the product. It will auto-update when an order is processed, and the storage area is free.

## Data Analytics and Reporting

The new system will employ a robust analytics platform that provides insights into warehouse performance, identifies bottlenecks, and supports data-driven decision-making. The new system will provide real-time dashboards and reports which will help to analyze warehouse performance.

## AI-Enhanced Internal Communication/Customer Support

Internal messaging and ticket generation incorporated in the new system will improve employee communication. Utilizing AI chatbots and virtual assistants will provide real-time order tracking and support to customers which will improve customer satisfaction.

## Scalability and Integration

The AI-integrated WMS is easily scalable as the business grows, and it can seamlessly integrate with existing systems, such as the Enterprise Resource Planning (ERP) software which will make it easier for report generation and financing.

## Long-term Profitability/ROI

Long-term profitability/revenue after implementation of the new system.

# Potential Concerns

Though the new system has so many benefits, it has some limitations as well:

## Current Server Overload

The proposed software may overload the current server in terms of network traffic and memory. So, we might need to upgrade to a bigger server that can handle the traffic flow.

## High Initial Cost

The initial cost of the system is high, but it can become profitable over time.

## Data Security and Privacy

The whole system is hosted on the cloud, and we do need to deal with data security and privacy issues.

# Other Alternatives/Solutions

To come to a better solution, we also identified and analyzed a few other options which are mentioned below:

## Buying a Third-Party WMS

We were considering subscribing/buying a third-party warehouse management system available on the market. However, it will be hard to customize and integrate it with our existing system and it will be costly too.

## Hiring More Staff

The other alternative is to hire more staff, which will help us to manage and improve the efficiency of the current complex warehouse management system. However, this will be costly and still will not solve most of the issues.

Therefore, we don’t recommend these alternatives.

# Budget & Timeline

The cost of the new project will be approximately USD 0.80 M and around 4 – 5 months will be required to implement the project.

# Recommendation & Request for Approval

Considering the benefits mentioned above, we would like to request the CEO to approve this new system so that we can automate the current warehouse operations with the help of AI and start using the new warehouse management system by April 2024.