

IMPLEMENTATION OF BARCODE SYSTEM IN APPAREL WAREHOUSE FOR LIVE STOCK AUDITING

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Abstract- This article discusses the growing popularity of barcode systems in the garment sector for enhanced accuracy and efficiency in inventory management. The utilization of barcodes enables real-time tracking of products, reducing errors and facilitating live stock auditing in apparel warehouses. Live stock auditing involves physically counting products to verify inventory counts, which can be time-consuming and error-prone, especially in large warehouses. However, implementing a barcode system streamlines and automates this process, minimizing errors and saving time. The article covers essential procedures for setting up a barcode system, including selecting appropriate labels and technology, system installation, and personnel training. The advantages of employing a barcode system in apparel warehouses for live stock auditing are also discussed.

Keywords: BARCODE SYSTEM IN APPAREL WAREHOUSE FOR LIVE STOCK AUDITING

I INTRODUCTION

Barcode systems are gaining popularity in the garment sector for their ability to enhance accuracy and efficiency in inventory management. By enabling real-time product tracking, barcodes minimize errors in the process. This is particularly beneficial in live stock auditing within apparel warehouses, where the physical counting of products is conducted to ensure alignment with the computer system's recorded count. In large warehouses, this manual process can be time-consuming and error-prone. However, the article emphasizes that the implementation of a barcode system can streamline and automate live stock auditing, significantly reducing errors and saving time. The content will cover essential procedures for setting up a barcode system, including the selection of suitable labels and technology, system installation, and personnel training. Additionally, the advantages of utilizing a barcode system in apparel warehouses for live stock auditing will be discussed.

II OBJECTIVES OF THE STUDY :

Understanding how this technology may increase the effectiveness and accuracy of warehouse operations is the main goal of research into warehouse barcode systems. Warehouses may automate inventory tracking, increase order accuracy, lower labour costs, and boost productivity by putting in place a barcode system.

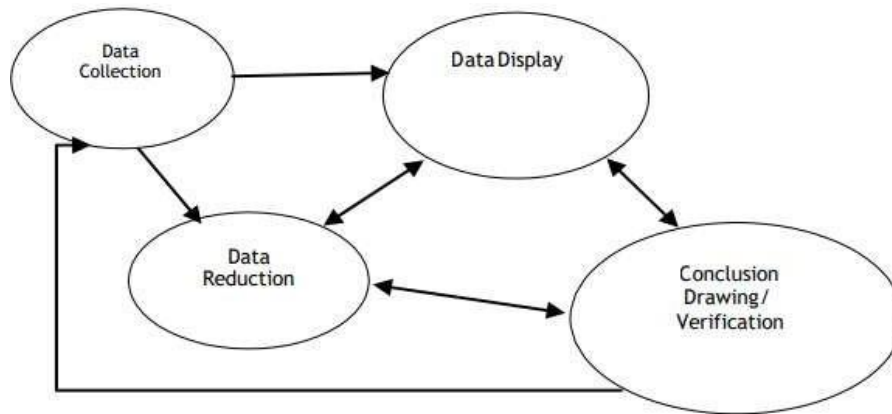
The following may be some of the specific goals of researching warehouse barcode systems:

- ❖ Understanding how well barcode systems reduce errors.
- ❖ Examining the effect of barcode systems on inventory visibility and tracking of finished goods.
- ❖ Examining how barcode systems affect reduces the labour time and cost.
- ❖ Effective utilisation of expensive store space.

III RESEARCH METHODOLOGY:

This research utilizes Qualitative approach to describe the details in how to apply barcode in every process in Warehouse Management System such as receiving, putaway, order processing/picking, checking outbound, loading and stock opname to improve efficiency in the warehouse. Data collection was done through a structured interview, semi-structured and in-depth interview. The data analysis techniques used in this study was an approach developed by Miles and Huberman that included (after data collection) data reduction, data separation from unfocused and too detailed one so that the data could reveal patterns or themes. Next was to display the data (data display) that served to help understand advanced analysis of certain information or event. The last process is the conclusion of the analysis based on the pattern and theme. Withdrawal conclusion is done continuously and simultaneously with the data reduction and data display. The data sources in this paper are informants who have the ability and information expertise that are in accordance with

this study (purposive). Because this study aims to determine the implementation of barcodes in warehouse management systems for warehouse efficiency, the information needed is information from warehousing professionals, especially in warehouse management systems.



LIMITATIONS:

The implementation of a barcode system in an apparel warehouse for livestock auditing can bring numerous benefits, but there are also some limitations to consider. Some of the limitations of the implementation of a barcode system in an apparel warehouse for livestock auditing may include:

- ❖ Cost of Implementing a barcode system can be expensive, especially for small or medium-sized businesses that may not have the budget for such an investment.
- ❖ Time of Implementing a barcode system requires time for planning, installation, and training employees.
- ❖ Maintenance Barcode systems require maintenance to ensure that they are functioning correctly.
- ❖ Barcode scanning limitations Barcode systems may have limitations on the types of labels that can be scanned.
- ❖ Employee adoption Implementing a barcode system requires employee buy-in and adoption.
- ❖ Security concerns Barcode systems require the collection and storage of data.

IV DESIGN AND IMPLEMENTATION OF BARCODE SYSTEM AND LIVE STOCK AUDITING IN TKL

Hardware and software are both components of a barcode scanning system. You may use the software that is a part of the warehouse management system to help control your inventory as well as to assist with picking, shipping, and other tasks. Barcoding is another capability. With handheld scanners, you can use the programme. Your inventory will be updated when a product's barcode is scanned. Additionally, it will guarantee that the merchandise chosen for the order by your personnel is the proper one.

OPERATIONS OF BARCODE SCANNER

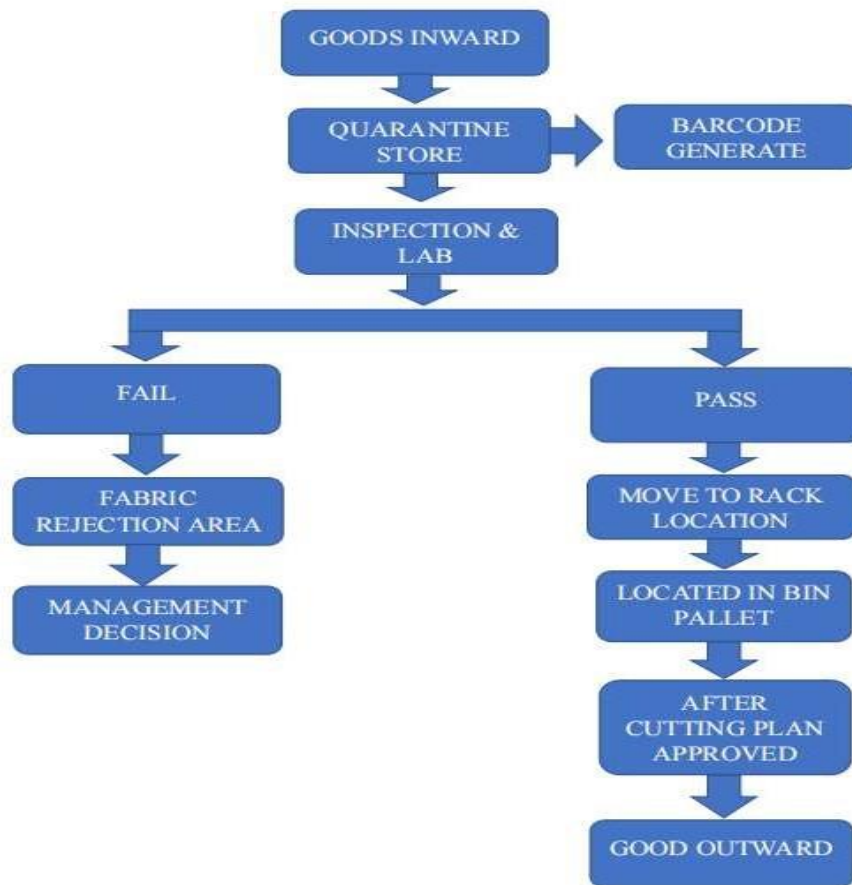
There are numerous applications for the barcode scanner in your warehouse. When storing the inventory, it can be used. In order for you to know how many products you have on your shelves and where they are, this will update the system. Naturally, it will also be helpful when the staff needs to pick the things and prepare them for shipping. The objects will be updated in the software after scanning. As will be covered later, it can also be used to track the things as they move about the warehouse.

Printing Barcodes

You will frequently need to print barcodes for usage in your warehouse. It's crucial to have a reliable barcode printer that can connect to and be integrated with your warehouse management system. Select the barcode scanning equipment and printers that are best for your business.

Using Barcode Scanning to Control Inventory and Track Stock

The code on a product is scanned using a barcode scanner. Your inventory management system reads the code and may then start tracking that particular barcode as the item moves around the warehouse. It enables staff members to discover where a product is located on shelves, while shipping, etc. Your inventory management software will be updated each time a worker scans that code. This facilitates item tracking.

DESIGN OF WAREHOUSE WORKING PROCESS IN TKL FLOWCHART**MAIN TESTS PERFORMED DURING FABRIC INSPECTION**

- ❖ GSM Check
- ❖ Thread Count
- ❖ Wet & Dry rub test
- ❖ Greyscale verification
- ❖ Dimensional Stability
- ❖ Colour Fastness
- ❖ Fabric Shrinkage
- ❖ Tear Resistance verification
- ❖ Colour Shades
- ❖ Washing stability
- ❖ Flame retardant
- ❖ 100% natural fibre verification

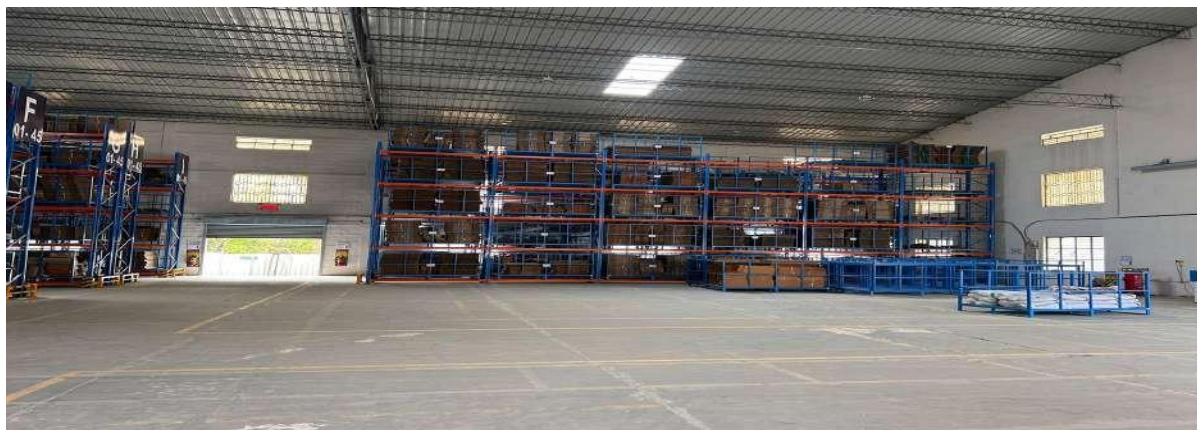
IMPLEMENTATION OF BARCODE SYSTEM IN AND LIVE STOCK AUDITING AT TKL



TKL Warehouse Space



**Warehouse Location Area Id
Warehouse Location Bin Pallet Area**



Warehouse Unloading Area

MEASUREMENT OF WAREHOUSE IN TKL:

TOTAL NUMBER RACK = 465
 TOTAL NUMBER LINES = 11
 9 LINES *45 = 405
 2 LINES *30 = 60
 1 PALLET RACK WEIGHT CARRIERS = 600 TO 700 KGS

	A	C	D	E	F	G	H	I	J	K	L	M
3	A-B1-L1	B-B1-L1	C-B1-L1	D-B1-L1	E-B1-L1	F-B1-L1	G-B1-L1	H-B1-L1	I-B1-L1	J-B1-L1	K-B1-L1	
4	A-B1-L2	B-B1-L2	C-B1-L2	D-B1-L2	E-B1-L2	F-B1-L2	G-B1-L2	H-B1-L2	I-B1-L2	J-B1-L2	K-B1-L2	
5	A-B1-L3	B-B1-L3	C-B1-L3	D-B1-L3	E-B1-L3	F-B1-L3	G-B1-L3	H-B1-L3	I-B1-L3	J-B1-L3	K-B1-L3	
6	A-B1-L4	B-B1-L4	C-B1-L4	D-B1-L4	E-B1-L4	F-B1-L4	G-B1-L4	H-B1-L4	I-B1-L4	J-B1-L4	K-B1-L4	
7	A-B1-L5	B-B1-L5	C-B1-L5	D-B1-L5	E-B1-L5	F-B1-L5	G-B1-L5	H-B1-L5	I-B1-L5	J-B1-L5	K-B1-L5	
8	A-B2-L6	B-B2-L6	C-B2-L6	D-B2-L6	E-B2-L6	F-B2-L6	G-B2-L6	H-B2-L6	I-B2-L6	J-B2-L6	K-B2-L6	
9	A-B2-L7	B-B2-L7	C-B2-L7	D-B2-L7	E-B2-L7	F-B2-L7	G-B2-L7	H-B2-L7	I-B2-L7	J-B2-L7	K-B2-L7	
10	A-B2-L8	B-B2-L8	C-B2-L8	D-B2-L8	E-B2-L8	F-B2-L8	G-B2-L8	H-B2-L8	I-B2-L8	J-B2-L8	K-B2-L8	
11	A-B2-L9	B-B2-L9	C-B2-L9	D-B2-L9	E-B2-L9	F-B2-L9	G-B2-L9	H-B2-L9	I-B2-L9	J-B2-L9	K-B2-L9	
12	A-B2-L10	B-B2-L10	C-B2-L10	D-B2-L10	E-B2-L10	F-B2-L10	G-B2-L10	H-B2-L10	I-B2-L10	J-B2-L10	K-B2-L10	
13	A-B3-L11	B-B3-L11	C-B3-L11	D-B3-L11	E-B3-L11	F-B3-L11	G-B3-L11	H-B3-L11	I-B3-L11	J-B3-L11	K-B3-L11	
14	A-B3-L12	B-B3-L12	C-B3-L12	D-B3-L12	E-B3-L12	F-B3-L12	G-B3-L12	H-B3-L12	I-B3-L12	J-B3-L12	K-B3-L12	
15	A-B3-L13	B-B3-L13	C-B3-L13	D-B3-L13	E-B3-L13	F-B3-L13	G-B3-L13	H-B3-L13	I-B3-L13	J-B3-L13	K-B3-L13	
16	A-B3-L14	B-B3-L14	C-B3-L14	D-B3-L14	E-B3-L14	F-B3-L14	G-B3-L14	H-B3-L14	I-B3-L14	J-B3-L14	K-B3-L14	
17	A-B3-L15	B-B3-L15	C-B3-L15	D-B3-L15	E-B3-L15	F-B3-L15	G-B3-L15	H-B3-L15	I-B3-L15	J-B3-L15	K-B3-L15	
18	A-B4-L16	B-B4-L16	C-B4-L16	D-B4-L16	E-B4-L16	F-B4-L16	G-B4-L16	H-B4-L16	I-B4-L16	J-B4-L16	K-B4-L16	
19	A-B4-L17	B-B4-L17	C-B4-L17	D-B4-L17	E-B4-L17	F-B4-L17	G-B4-L17	H-B4-L17	I-B4-L17	J-B4-L17	K-B4-L17	
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21	A-B4-L19	B-B4-L19	C-B4-L19	D-B4-L19	E-B4-L19	F-B4-L19	G-B4-L19	H-B4-L19	I-B4-L19	J-B4-L19	K-B4-L19	
22	A-B4-L20	B-B4-L20	C-B4-L20	D-B4-L20	E-B4-L20	F-B4-L20	G-B4-L20	H-B4-L20	I-B4-L20	J-B4-L20	K-B4-L20	
23	A-B5-L21	B-B5-L21	C-B5-L21	D-B5-L21	E-B5-L21	F-B5-L21	G-B5-L21	H-B5-L21	I-B5-L21	J-B5-L21	K-B5-L21	
24	A-B5-L22	B-B5-L22	C-B5-L22	D-B5-L22	E-B5-L22	F-B5-L22	G-B5-L22	H-B5-L22	I-B5-L22	J-B5-L22	K-B5-L22	
25	A-B5-L23	B-B5-L23	C-B5-L23	D-B5-L23	E-B5-L23	F-B5-L23	G-B5-L23	H-B5-L23	I-B5-L23	J-B5-L23	K-B5-L23	
26	A-B5-L24	B-B5-L24	C-B5-L24	D-B5-L24	E-B5-L24	F-B5-L24	G-B5-L24	H-B5-L24	I-B5-L24	J-B5-L24	K-B5-L24	
27	A-B5-L25	B-B5-L25	C-B5-L25	D-B5-L25	E-B5-L25	F-B5-L25	G-B5-L25	H-B5-L25	I-B5-L25	J-B5-L25	K-B5-L25	
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30	A-B6-L28	B-B6-L28	C-B6-L28	D-B6-L28	E-B6-L28	F-B6-L28	G-B6-L28	H-B6-L28	I-B6-L28	J-B6-L28	K-B6-L28	
31	A-B6-L29	B-B6-L29	C-B6-L29	D-B6-L29	E-B6-L29	F-B6-L29	G-B6-L29	H-B6-L29	I-B6-L29	J-B6-L29	K-B6-L29	
32	A-B6-L30	B-B6-L30	C-B6-L30	D-B6-L30	E-B6-L30	F-B6-L30	G-B6-L30	H-B6-L30	I-B6-L30	J-B6-L30	K-B6-L30	
33	A-B7-L31	B-B7-L31	C-B7-L31	D-B7-L31	E-B7-L31	F-B7-L31	G-B7-L31	H-B7-L31	I-B7-L31			
34	A-B7-L32	B-B7-L32	C-B7-L32	D-B7-L32	E-B7-L32	F-B7-L32	G-B7-L32	H-B7-L32	I-B7-L32			
35	A-B7-L33	B-B7-L33	C-B7-L33	D-B7-L33	E-B7-L33	F-B7-L33	G-B7-L33	H-B7-L33	I-B7-L33			
36	A-B7-L34	B-B7-L34	C-B7-L34	D-B7-L34	E-B7-L34	F-B7-L34	G-B7-L34	H-B7-L34	I-B7-L34			
37	A-B7-L35	B-B7-L35	C-B7-L35	D-B7-L35	E-B7-L35	F-B7-L35	G-B7-L35	H-B7-L35	I-B7-L35			
38	A-B8-L36	B-B8-L36	C-B8-L36	D-B8-L36	E-B8-L36	F-B8-L36	G-B8-L36	H-B8-L36	I-B8-L36			
39	A-B8-L37	B-B8-L37	C-B8-L37	D-B8-L37	E-B8-L37	F-B8-L37	G-B8-L37	H-B8-L37	I-B8-L37			
40	A-B8-L38	B-B8-L38	C-B8-L38	D-B8-L38	E-B8-L38	F-B8-L38	G-B8-L38	H-B8-L38	I-B8-L38			
41	A-B8-L39	B-B8-L39	C-B8-L39	D-B8-L39	E-B8-L39	F-B8-L39	G-B8-L39	H-B8-L39	I-B8-L39			
42	A-B8-L40	B-B8-L40	C-B8-L40	D-B8-L40	E-B8-L40	F-B8-L40	G-B8-L40	H-B8-L40	I-B8-L40			
43	A-B9-L41	B-B9-L41	C-B9-L41	D-B9-L41	E-B9-L41	F-B9-L41	G-B9-L41	H-B9-L41	I-B9-L41			
44	A-B9-L42	B-B9-L42	C-B9-L42	D-B9-L42	E-B9-L42	F-B9-L42	G-B9-L42	H-B9-L42	I-B9-L42			
45	A-B9-L43	B-B9-L43	C-B9-L43	D-B9-L43	E-B9-L43	F-B9-L43	G-B9-L43	H-B9-L43	I-B9-L43			
46	A-B9-L44	B-B9-L44	C-B9-L44	D-B9-L44	E-B9-L44	F-B9-L44	G-B9-L44	H-B9-L44	I-B9-L44			
47	A-B9-L45	B-B9-L45	C-B9-L45	D-B9-L45	E-B9-L45	F-B9-L45	G-B9-L45	H-B9-L45	I-B9-L45			

Tkl warehouse location and bin id no

QR CODE

UPC bar codes are rectangular and feature a vertical line design on them. An arrangement of square-shaped points

forms a QR code. This simple adjustment shortens checkout lines and speeds up inventory management because it enables scanners to read the code both vertically and horizontally. The QR code's fragmented structure enhances its capacity to hold data. More than 4,000 characters can fit into a single QR code. With this capability, the code can link to photos, videos, and websites that are specifically related to the product. Important information regarding the component or product in front of customers and employees can be obtained.

THE PERKS OF USING QR CODES FOR INVENTORY MANAGEMENT

- ❖ Real-Time Inventory Management
- ❖ Dynamic Information
- ❖ Increased Speed and Accuracy
- ❖ Simple Implementation

The Benefits of QR Codes on Products

Linking QR code scans to other platforms, including those used for POS transactions, is a step in the evolution of QR code software. The interaction between companies and customers is evolving as a result of the use of QR codes on product packaging. Since the majority of consumers own smartphones, they can also benefit from the information included in the code.

- ❖ Benefits for the workers
- ❖ Benefits for the Business

PROCESS OF METHOD FOR GENERATING BARCODE SYSTEM

Moving bulk containers and individual products seamlessly through multiple distinct processes is essential for a warehouse's efficiency. When performing inventory counts and other tasks, using spreadsheets and manual data entry might result in mistakes and limit staff's ability to react rapidly to changes.

You can name each warehouse location (using floor labels or hanging labels), rack, pallet, and container with a label that can be quickly read at any time thanks to warehouse barcoding (and warehouse barcode labels). This is helpful for moving goods between departments or locations and conducting semi-automated cycle counts.

Barcodes offer a few distinctive advantages that are crucial for warehouse operations in addition to automated scanning.

- ❖ speedier order processing
- ❖ decreased administrative and operating costs
- ❖ fewer mistakes
- ❖ more accuracy in cycle counting and inventory
- ❖ Excellent scalability for potential future growth
- ❖ A polished and efficient warehouse layout

By observing real-time data and utilising a centralised warehouse management system, a warehouse barcoding system also enables the development of a perpetual inventory.

- ❖ Step 1. Create an Initial Barcode Plan
- ❖ Step 2. Configure the Centralised Software Platform
- ❖ Step 3. Select Barcode Symbologies
- ❖ Step 4. Design Barcode Labels
- ❖ Step 5. Establish Barcode Inventory Processes

DESIGN AND GENERATING BARCODE LABEL FOR TKL WAREHOUSE IN FABRIC ROLL

TKL warehouse fabric rolls using Bartender software:

- ❖ First, open Bartender software and create a new label template. To do this, click on "File" and then "New" in the menu bar. Choose the label size and layout that you want for the fabric rolls.
- ❖ Once you have created a new label template, you can start designing it by adding text, images, and barcode

objects. To add a barcode, click on "Barcode" in the toolbar and select the type of barcode that you want to use, such as QR Code or Code 39.

- ❖ After selecting the barcode type, drag and drop it onto your label template. Double-click on the barcode to customize its properties, such as the data that it will encode and the font size.
- ❖ To add text to your label, click on "Text" in the toolbar and drag and drop it onto your label template. Double-click on the text to customize its properties, such as the font size, colour, and alignment.
- ❖ You can also add images to your label by clicking on "Picture" in the toolbar and selecting the image file that you want to use.
- ❖ Once you have designed your label, you can preview it by clicking on "Preview" in the toolbar. Make any necessary adjustments to the design before printing.
- ❖ To generate barcode labels for your fabric rolls, click on "File" and then "Print" in the menu bar. Select the printer that you want to use and the number of labels that you want to print. Click on "Print" to generate the barcode labels.



Tropic Knits (TKL Knits India Pvt. Ltd)



Tkl barcode label no 1



Tkl barcode label no 2

FINDINGS:

- ❖ IMPROVED INVENTORY ACCURACY
- ❖ INCREASED EFFICIENCY
- ❖ REDUCED LABOUR COSTS
- ❖ REAL-TIME INVENTORY TRACKING
- ❖ ENHANCED CUSTOMER SATISFACTION
- ❖ IMPROVED COMPLIANCE

CONCLUSION:

Implementing barcodes in warehouses has many benefits, including the ability to reduce errors in receiving goods and speed up that process, the ability to automatically determine where goods are stored, the ability to reduce errors in where those goods are picked up by the picker and the amount of goods picked up by that picker, the ability to determine whether there is a shortage or surplus of goods, and the ability to assess whether a project is feasible. Additionally, the use of barcodes can speed up the delivery of information and data reports. The Warehouse Management System will be automatically updated in real-time with information from the Receiving process, Putaway, Order Processing / Picking, Outbound Checking, Loading, and Stock Take / Opname so that the data obtained is accurate. Therefore, the addition of barcodes to the warehouse management system can boost warehouse productivity. In comparison to a warehouse that still relies on manual handling, one that has barcodes installed can complete every process more quickly and precisely. To increase efficiency in the warehouse, the warehouse must integrate this barcode technology into its warehouse management system.

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