KEMSA Support Program
Warehouse Analysis Report
April 2013

Kenya Medical Supplies Agency (KEMSA) Support Program
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## ACRONYMS

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<th>Acronym</th>
<th>Description</th>
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<tbody>
<tr>
<td>DISC</td>
<td>Deloitte Integrated Supply Chain Methodology</td>
</tr>
<tr>
<td>EDI</td>
<td>Electronic Data Interchange</td>
</tr>
<tr>
<td>ERP</td>
<td>Enterprise Resource Planning</td>
</tr>
<tr>
<td>GPS</td>
<td>Global Positioning System</td>
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<tr>
<td>GWP</td>
<td>General Warehousing Practices</td>
</tr>
<tr>
<td>ICT</td>
<td>Information and Communications Technology</td>
</tr>
<tr>
<td>KEMSA</td>
<td>Kenya Medical Supplies Agency</td>
</tr>
<tr>
<td>SOP</td>
<td>Standard Operating Procedures</td>
</tr>
<tr>
<td>WMS</td>
<td>Warehouse Management System</td>
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EXECUTIVE SUMMARY

This report provides an analysis of the Kenya Medical Supplies Agency’s (KEMSA’s) current warehouse operations processes and activities as well as recommendations to implement identified opportunities for improvements.

Deloitte conducted this analysis by leveraging our Deloitte Integrated Supply Chain (DISC) methodology and toolkit, based on industry leading supply chain practices, and applying the unique requirements of KEMSA’s public health supply chain operations to tailor the approach.

We examined the warehousing processes currently in place at KEMSA’s main distribution facility in Embakasi. The processes reviewed in detail include receiving, put away, order management, picking, consolidating, and dispatch. We also conducted an analysis of the enabling technology as well as the current infrastructure configuration to determine if improvements in functionality and physical organization are necessary to support the process improvements.

A review of the Standard Operating Procedures (SOPs) revealed a basic guideline for warehousing processes at KEMSA. We noted that the current practices and processes do accomplish the fulfillment of orders on a daily basis; however, the abundant, manual steps required to complete the picking and consolidation functions prevent additional volumes to be absorbed. KEMSA would not be able to increase volumes without significantly improving its picking rates, space utilization, and overall organization of the order fulfillment process.

Given the consistently high volumes of KEMSA’s customer demand, and the urgency to access life-saving medications, it is imperative that improvements be made that can yield short-term benefits, and at the same time, are of high impact and return. To this end, we strived to make practical and implementable recommendations. These include improvements in the following areas:

- **Physical Changes** – Warehouse caging and relocation of racks improvements are needed to accommodate process changes and improve product flow. Increasing warehouse velocity is the key to increasing productivity. The aim of caging is to restrict warehouse access to unauthorized staff.

- **Receiving** – Improving the receipt of goods into the warehouse will result in accurate count and expedited quality assurance (QA) processing when needed. The proper handling and palletizing of product will facilitate product flow and maximize space utilization.

- **Put Away** – Streamlining operations in the warehouse starts with product receipt and put away. The Put Away function affects everything that happens downstream in the order fulfillment process; you cannot fill orders if you cannot find the product. For this reason, implementing a zone-restricted put away strategy will yield immediate results during the pick, pack, and ship processes.

- **Picking** – The picking task tends to be tedious and time consuming. It is also plagued with errors, as it is mostly a manual entry, even though it is carried out with Warehouse Management System (WMS) handhelds. This task, along with consolidating, represents the greatest opportunity for improvement. We observed that about half of the orders are low quantity, fine picking type orders. We recommended that KEMSA implement a high-
speed flow rack model to pick, pack, and consolidate these fine-picking orders. This will accelerate the picking of these orders as well as the bulk orders where full cases are being picked. Separating the fine picks from bulk will allow uninterrupted case picking and, thereby, accelerate the process.

- **Consolidating** – The consolidation task is also carried out in batch mode. We observed that many times, this task is not completed on time because of errors made in the picking process and confusion about the orders that need to be consolidated for a route. We recommended that the picking task and the consolidation task happen in sequence. That is, picking, verifying, packing, and consolidating should be all executed in sequence for each order released.

- **Dispatch** – This process was previously analyzed; however, as a direct recipient of improvements made in the picking and consolidation area, it will need some much needed changes. The addition of a staging area will improve Dispatch by minimizing the current clutter that exists. This will also restrict this area to completed routes only and eliminate today’s confusion when loading trucks. The synchronization of processes is completed by achieving a flow of product into the staging area ready to be loaded onto a truck; organized by route and order.

- **General Warehouse Practices (GWP)** – We identified a number of GWP improvements; these contribute to the overall productivity of the warehouse, ensure safety and compliance, and improve the well-being of the warehouse staff so that interruptions are minimized during the peak labor hours. These include implementing lean principles such as signage and performance feedback, improving lighting and temperature in the worksite, and providing opportunities for skill building and training to staff.

The information in this report provides further details of the analysis and the recommended courses of action to enhance and strengthen the warehousing and order fulfillment processes at KEMSA.
INTRODUCTION

In May 2011, USAID awarded the KEMSA Support Program to Deloitte Consulting, LLP and partners in order to strengthen KEMSA’s warehousing, distribution and inventory management systems, and customer service functions.

In the initial months of the project, the project team in collaboration with KEMSA counterparts confirmed that KEMSA faces challenges with their current warehousing operations. This includes processing of orders, maintaining adequate productivity in the warehouse floor, and keeping up with the volumes. We identified opportunities in the physical infrastructure and recommended significant changes to the execution of the pick, pack, and consolidation processes to meet the current increasing volumes and potential growth in the coming years.

Warehouse management improvements objectives for KEMSA include the design and standardization of processes, review and update of SOPs, improvements to the receiving and shipping activities, general organization of the warehouse floor, and defining a leaner and more productive order fulfillment strategy.

The following analysis provides a comprehensive picture of KEMSA’s current pick, pack, and ship processes, and key recommendations to address process gaps and mitigate risk of suboptimal performance. The subsequent corrective actions will ultimately help KEMSA improve health outcomes through efficient and effective order fulfillment of health commodities.

SCOPE

The scope of the analysis centered on KEMSA’s Embakasi warehouse as it is the main distribution center for the organization. We examined each operational area of the warehouse for continuity of process, bottlenecks in performance, and potential for improvement. We evaluated the improvement opportunities identified for impact and timeliness and present practical solutions. Optimized execution in each of the areas identified below is critical for KEMSA’s warehousing and distribution organization as supply chain complexity, order volumes, and the number of health facilities continually increase due to evolving push-to-pull distribution mechanisms and other external pressures.

Warehouse analysis focus areas include:

- Receiving
- Quality Assurance
- Put Away
- Picking
- Consolidation
- Distribution
- Transportation
- Inventory Control
- Information and Communications Technology (ICT) Support
- Warehouse Layout
- Process and Product Flow
- Personnel
**APPROACH**

To develop a practical and executable plan, the approach used to review KEMSA’s warehouse policies and practices is based on the Deloitte’s supply chain diagnostic framework. The methodology leverages standard practices, processes, and benchmark content found in industry and Deloitte’s own supply chain experience to provide a holistic assessment and solution development approach.

The assessment includes a detailed review on warehouse processes, SOPs, roles and responsibilities, and the development of **practical and implementable solutions** to improve current KEMSA performance in delivering a better healthcare distribution process for the people of Kenya.

Specific activities beyond the analysis included the updating of SOPs for current warehousing processes as well as the future processes that will be needed as improvements are implemented. We developed the SOPs with involvement from key KEMSA team members in the areas of Customer Service, Warehousing Operations, and Distribution. KEMSA provided validation and input on business rules and legislation applicable to the processes to drive practicality and compliance. We conducted on-the-job and formal training to the overall KEMSA team so that they are familiar with the design process and are able to amend going forward, if needed.

**ANALYSIS, FINDINGS, AND RECOMMENDATIONS**

We conducted an analysis of the “As-Is” processes and tools used in the order fulfillment processes in the warehouse. This included an examination of KEMSA’s inbound and outbound processes, as well as a review of related Enterprise Resource Planning (ERP) and WMS functionality in order to align any potential recommendations with future functionality needed to support new processes.

The analysis identified GWP gaps in several areas outlined in this section:

- **Warehouse Physical Layout** – Warehouse Caging and racks positioning
- **Receiving** – Improving the receipt of goods into the warehouse
- **Put Away** – Product receipt and put away
- **Picking** – First step of the order fulfillment process
- **Consolidating** – Packing and verifying orders
- **Dispatch** – Addition of a staging area
- **GWP** – Overall productivity of the warehouse

**Warehouse Physical Layout**

**Finding:** The physical layout of the warehouse does not make use of space appropriately, hinders the receiving and dispatch processes, and does not promote security in the warehouse floor.

We recommend several improvements to the physical layout of the warehouse that are linked to our current recommendations for the picking and consolidation processes.
**Warehouse Caging**

Our initial review of warehouse security and access control found that currently there is no access control and the warehouse floor is easily accessible from any entry point. Our recommendation is to install a perimeter fence (caging) enclosing the office, receiving, and dispatch areas. The aim with caging is to restrict warehouse access to unauthorized staff and maintain secured control of the inventory floor.

Figure 2 below depicts the positioning of the cage we recommend. The red line indicates where the caging will be constructed. The small green “Xs” near the bottom of Figure 2 indicate emergency exits. The blue “Xs” on the left and right side of Figure 2 indicate operational gates where product can be transferred from one area to another. The cage height proposed is 3.3 meters, with the height being adjusted to 6 meters where the cage runs through racks.

**Figure 2 – Embakasi Warehouse Caging and Layout**

**Racks Layout**

The dispatch and receipt areas lack the space necessary to conduct proper loading and unloading of product. For this reason, and to create an expanded workable area in both locations, we recommend that a total of 8 racks (4 racks in each area) be moved out of those areas and relocated in sections to extend the current racks as shown in Figure 2 above (reference the gray colored racks in Figure 2). Adding an extra rack section (in green in Figure 2) to the end of existing racks will maintain the existing room while allowing for the extra room in both the receipt and dispatch areas.

In the receipts area, removing 4 racks will allow the creation of a proper receipts area where product can be offloaded and organized by commodity batches. This will allow for offloading inside the warehouse and product can be protected from the elements. In the dispatch area, removing 4 racks will help create a staging area where loads can be organized by route. The details on the receiving and dispatch processes will be discussed later in this section.
Receiving Process

Finding: The use of small pallets results in overloading and leaning boxes throughout the warehouse as pallets are not shrink-wrapped. In addition, in an effort to stack them properly, boxes overhang when using the smaller pallets, often crushing them.

Currently KEMSA uses at least three pallet sizes:

- 110 cm by 110 cm (International Organization for Standardization size)
- 120 cm by 120 cm
- 110 cm by 76 cm (small pallet size)

To alleviate these issues we recommend KEMSA acquire and only use the standard, 110 cm, pallet as shown in the picture below. This immediate impact recommendation will eliminate the issues of wasted rack space, leaning pallets, and overhang. See examples in the table below.

**Figure 3 – Standard Pallet Description and Example**

<table>
<thead>
<tr>
<th>Pallet Description</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>Standard Pallet – The figure on the right depicts a standard size pallet at KEMSA, stacked correctly and at the proper height.</td>
<td><img src="image" alt="Standard Pallet" /></td>
</tr>
</tbody>
</table>

The examples below were also captured in the KEMSA warehouse. As noted, the use of the smaller pallets results in wasted space, leaning boxes, and overhang, which eventually causes the pallet to give way and be crushed.

**Finding:** Product arrives at the KEMSA warehouse often unexpectedly making it difficult for the receiving team to plan for unloading. Most of the paperwork required is generated manually.

Suppliers bring their paperwork with the product and sometimes they arrive unexpectedly. Appointments are made manually by phone or fax. The WMS does not have an appointment
function. We recommend the implementation of advanced shipping notices via Electronic Data Interchange (EDI). This will allow for planning of truck arrival and receipt of delivery paperwork well in advance of the physical delivery.

Implementing EDI involves changes in KEMSA’s WMS to accommodate the transactions needed for proper advance notice of shipping and arrival at the warehouse. The potential EDI transactions to be implemented include:

- EDI 850 – Purchase Order
- EDI 855 – Purchase Order Acknowledgment
- EDI 856 – Ship Notice/Manifest
- EDI 857 – Shipment and Billing Notice
- EDI 861 – Receiving Advice/Acceptance Certificate
- EDI 204 – Motor Carrier Load Tender
- EDI 210 – Motor Carrier Freight Details and Invoice
- EDI 214 – Transportation Carrier Shipment Status Message, including Proof of Delivery (POD)

We recognize that a current plan exists to implement Global Positioning System (GPS) tracking for trucks delivering KEMSA product, inbound and outbound.

**Finding:** The Embakasi warehouse is not equipped with shipping and receiving docks resulting in processes being performed outside. Product is unloaded and left out in the elements for several hours on the receiving end.

Both the receiving and dispatch areas have available space to build docks by digging trenches to the appropriate depth and building leveled docks against the building’s foundation. This would alleviate the current issues with manual load/unload processes, and provide a safer work environment. We recommend a retractable dock door protector to cover the overhead gap during rain, allowing the work to continue without weather related delays. Figure 4 below shows two examples of trench built docks.

![Figure 4 – Examples of Trench Load/Unload Docks](image)

Examples: These are two examples of docks built by digging into the ground and leveled to the building’s foundation. Both examples make use of overhead protection from the elements.

A key consideration for this type of capital investment is the location tenure; specifically, improvements to leased facilities must be weighed against the useful life of the improvement. A detailed analysis should be performed that compares the costs of the improvement against the planned time occupying the facility. For example, it may not be beneficial to implement the docks improvement if a move is planned within two years.
Put Away Process

Finding: The put away process is manual, resulting in product being stored in multiple locations; increased time spent looking for product, and increased picking time.

The current process is manual; the shopkeepers and warehouse supervisors select locations for product based on space availability and proximity to similar product. The WMS is updated manually, after the fact, at the end of the process. Although they try to locate product in their assigned locations as much as they can, this is often not the case. A lot of product is stored in the isles as well due to overflow. The result of this ad hoc put away process is crowding of the isles; product stored in multiple locations, and increased time during the picking process due to pickers looking for product throughout the warehouse.

Our recommendation is to implement a System Restricted Put Away by Zone. This strategy gives the warehouse the flexibility of using available free space while minimizing travel time during the picking process. Figure 5 below describes the System Restricted Put Away by Zone.

Figure 5 – System Restricted Put Away by Zone

The current WMS functionality will have to be modified to accommodate put away by zones. This functionality is different from the current system directed functionality, which is disabled.

The objective is to have the system direct the put away task to a location in the vicinity, or zone, for a group of products classified as A, B, or C as follows:

- Zone A – Fast moving product
- Zone B – Periodic picks
- Zone C – Slow moving product

When a space is available, and the product is in the correct zone, then the put away task can be accomplished and the system updated. The figure below depicts the logic recommended for the WMS system updates.
Picking Process

Finding: The picking process is cumbersome and tedious, often involving at least three checkpoints for accuracy. Bulk and fine pick orders are comingleel, leaving open boxes in the warehouse floor for extended periods. Picking is accomplished mostly in a manual fashion.

Flow of process and task

Once orders are verified and quantities allocated by Customer Service, an email is sent to warehouse supervisors. The picking tasks are manually “triggered” by this email; however, if the supervisor is not checking their email or is not there to check, then the task is not acknowledged or processed. Pick tasks should be automatically created based on the verified and allocated orders. These will kick off the activity on the warehouse floor to begin the pick task.

WMS Item Codes

Currently an item code (KEMSA item number) is assigned when product is received in the warehouse. A label is generated and pasted to the box at this time. At the time of picking, this item code is scanned from the box, along with the quantity, size, and batch number. Capturing the UPC/GS1 barcode in the WMS system will eliminate this extra step. The UPC/GS1 already comes preprinted for all products that are received at KEMSA. There are some exceptions and these can be handled by the existing process.

Scanning Process for Picking

Although the picking process is accomplished through the use of a handheld scanner, the steps are very manual and repetitive; three scans are required to confirm the same information, a paper-based barcode is used to transmit data, and the quantity entry is also done manually. Automating the process will eliminate all of the manual entry and using the scans to trigger the next tasks would greatly improve the time it takes to pick product. The automated workflow would greatly diminish the idle time between tasks spent on waiting for the next assignment or looking for printed barcodes and labels.
**Picking Performance**

Currently bulk and fine picks are performed simultaneously, slowing down both processes due to the variability of quantities ordered for any single product. Physically separating these pick types will result in higher speeds while improving accuracy. The flow racks technique is the industry’s preferred way to achieve speed and product flow.

The flow rack area will allow for fast picking, consolidation, and packing of fine pick orders and lines. Fine pick orders require units to be picked instead of full case picks. For example, Rural Health Facilities often order several bottles or boxes of a product instead of a full case. Figure 7 below describes the fine pick process at a high level.

![Figure 6 – Fine Pick Area and Process](image)

The steps involved in the fine pick process are described below.

<table>
<thead>
<tr>
<th>Step</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Bins (or boxes) are assigned to orders in the conveyor</td>
</tr>
<tr>
<td>2</td>
<td>Product is picked and scanned into the bins</td>
</tr>
<tr>
<td>3</td>
<td>Bin is checked for accuracy at the end of the conveyor, recorded in the system, and packed for delivery</td>
</tr>
<tr>
<td>4</td>
<td>Packed items are placed in the Consolidation Area and merged with bulk picks for consolidation</td>
</tr>
<tr>
<td>5</td>
<td>Orders are verified and consolidated by route, only fully consolidated routes are then moved to the Dispatch Area</td>
</tr>
<tr>
<td>6</td>
<td>Full routes are ready for loading onto a truck</td>
</tr>
</tbody>
</table>

Flow Racks are specially designed to handle fine picks; they are similar to the existing racks in the warehouse. Product is stored in three levels that are easily accessible for picking single items.
without the use of a forklift or hand truck. The figure below depicts the physical configuration of the flow racks.

**Figure 8 – Flow Racks Physical Configuration**

The flow racks can accommodate 108 unique items per side, this account for all of the space needed for products at KEMSA. The details for flow racks are as follows:

- 3 levels of product, each with 6 picking slots for a total of 18 slots per rack space
- There are 6 rack spaces per rack length, for a total of 108 product spaces
- Each picking area in Figure 7 above has two racks per side, resulting in 216 product slots
- For safety reasons, only two levels of the racks as they exist today will be used
- Additional flow racks for ARVs may be implemented in the future near the kitting area

The key requirement for flow racks is the appropriate sortation of line items in each order that comes down from Customer Service. The sequence in which the picks are to take place should match the physical order of the items in the fine pick area. This will prevent the pickers from walking back and forth many times while picking a single order.

For example, an order with three lines must be sorted so that the first line in the task aligns with the first few items in the rack from where it is being picked. The second line should be aligned further down the rack, and so on as depicted in Figure 9, below. The objective is to achieve a “one pass” pick action in the fine pick area.

**Figure 9 – Flow Racks Order Sortation Example**

The position of items in the rack should be static. That means it should not change often unless new items are introduced or the frequency of pick changes it from an A item to a B item. Aligning the order lines to appear in the order they should be picked will enable this “one pass” pick action. As discussed, the fine pick area will be organized as follows:

- A Items (fast moving) will be stored in the middle flow rack – at hand level
- B Items (periodic) will be stored in the upper flow rack – at eye level
- C Items (slow) will be available in the lower flow rack – at knee level

This means that the items sequence from one end to another should be organized by ascending item number. This is the key to sort the order lines in the WMS so that they align to the physical order of the items in the rack.

The WMS must automatically perform the sortation of line items within an order to align with the picking locations on the flow racks in the fine pick area. The system must do this prior to releasing the picking task to the warehouse floor.

**Flow Racks Hardware**

The warehouse hardware necessary for implementation of flow racks can be acquired with relatively low cost equipment. The flow racks setup requires the use of a conveyor, carton flow racks or shelves installed, a verification station at the end of each conveyor, and a packing station to pack and seal completed orders. The pictures below are examples of the hardware.

![Flow Racks Hardware Examples](image)

**Personnel**

Given the current volume of orders and the distribution between bulk and fine picks, we estimate the current level of personnel should not change immediately; however, with KEMSA’s growth projections it is reasonable to expect an increase in staff in the future. We recommend that warehouse personnel should be cross-trained to perform any of the picking and consolidation activities. This provides assignment flexibility and allows employees to perform any of the tasks when needed. We recommend two shifts to be established to process orders and tasks in sequence.

The number of personnel we recommend for the new environment are as follows:

- 8 total pickers in flow rack areas, 2 pickers for each flow rack
- 2 order verifiers at the end of the conveyors
- 6 bulk pickers
- 5 consolidators
- Shopkeepers perform inventory management and replenishment functions

Our performance management team calculated that the picking process is currently carried out at a rate of 14 picks per hour total. That standard will be used as a minimum performance metric for the new picking environment; however, we believe this will naturally increase, as the streamlined tasks will provide speed and accuracy.
Consolidating Process

Finding: The consolidation process is done separately from picking, typically on the second shift, starting at 7 pm. This task is tedious and confusing as it repeats the verifications done during the picking task and consolidators have to find all of the lines for each order. This results in a somewhat chaotic effort every night. The process is often times not completed.

Our recommendation is to align the picking and consolidation tasks to occur simultaneously. Picking, verifying, and consolidating should be a single flow process. This allows the preparation of orders by route as they are completed. This will also greatly reduce the time it takes to prepare orders for shipping and will eliminate the issues encountered with boxes remaining open in the consolidation area, sometimes overnight, and will reduce errors resulting in time-consuming rework.

Fine picked and bulk picked lines will converge in the consolidation area ready for labeling and shipment. The figure below describes the process logic to be implemented.

We recommend KEMSA implement consolidation by route and order instead of relying on a paper barcode as it is done today. Currently, the pickers record their information on a preprinted paper barcode that contains the information the consolidators will use to verify an order. The papers are typically left on top of the boxes, sometimes lost or misplaced. The WMS should contain this information as the process flows from one task to another. The scanners should be used to track the progress and only when the process is done, labels with barcodes should be printed and attached to the boxes.

The picking and consolidation process should follow the established Master Routes in the WMS. We understand that KEMSA developed Master Routes based on the new county structures. We understand that the required system functionality to capture the routes is under design and needs to be linked to the picking process.
Dispatch Process

Finding: The dispatch area is disorganized with little attention given to how shipments are staged.

We recommend KEMSA restrict the release of product to dispatch only to completed orders, reconfigure and design a staging area, and create fixed lanes for staging routes.

Consolidators should verify that all orders within a route are complete and ready to be delivered before they are moved to the dispatch area. The newly reconfigured consolidation and dispatch areas should mirror each other. This will ensure that when trucks arrive, the dispatch personnel is ready to begin loading and no time is wasted trying to understand what needs to go in the truck.

As previously stated, two racks near the dispatch should be moved back into the warehouse. This will allow enough room in the area to create an intuitive staging area demarcated by lines on the floor. Each staging lane will be reserved for the routes being shipped during the day. The wall on the end of the staging area will have signs indicating the position for orders within the route. Figure 12 is a graphical representation of an intuitive staging area:

![Figure 12 – Picking and Consolidation Alignment Process Logic](image)

Technology Enablement

Finding: Current system performance causes slow response time in the handheld devices and desktops, especially when performing picking and consolidation tasks.

We recommend that an effort to improve the wireless bandwidth in the warehouse be made a priority as this directly impacts productivity and increases personnel frustration with equipment. An in-depth analysis should be performed to remedy the performance issue. This should include a review of:

- Access points and their location
- System capacity and bandwidth
- Application and network server capacity
- Antennas and coverage – directional versus omnidirectional coverage
- RF version being used – for WIFI (the preferred is 802.11n)
- Explore the use of open RF (not WIFI)
Finding: To support the changes proposed in this report, several improvements to the existing functionality must be made.

A review of the current ERP/WMS functionality and support to develop future functionality should take place in order to fully take advantage of the improvements proposed.

These changes include the following:

- Flow rack functionality – dual locator function to accommodate fine picking
- Zone determined put away – allows for system guided put away with overrides
- Automate workflows – system triggered status and task generation for orders
- Additional data fields – capture UPC/GS1 codes
- EDI functionality – format EDI transactions in the WMS system
- Deployment of workstations and label printers on the warehouse floor to facilitate order completion

General Warehouse Practices

Finding: There are several issues with organization, cleanliness, and general disarray in the warehouse.

We recommend establishing a lean program and take advantage of simple, but highly impactful, solutions to everyday issues across the facility. For example:

- Use intuitive marking in the receipt, warehouse, consolidation, and dispatch areas.
- Improve and install signage indicating process and product flow – for example, “only completed orders” sign above the gate leading to the dispatch area
- Assign consolidation areas demarcated by floor tape (or paint) to segregate orders and keep organization in the floor
- Install a “Performance Wall” in the picking and consolidation area – update daily with yesterday’s statistics in order to provide instant and continuous feedback
- Improve lighting throughout the warehouse – dim lighting contributes to worker fatigue and low productivity

The picture below depicts examples of intuitive signage for the warehouse.

Figure 12 – Examples of Intuitive Signs for the Warehouse
We recommend improving the working conditions at the warehouse by installing personnel comfort features and to fix the existing issues that reduce productivity and loss time. The following examples are needed to bring the Embakasi warehouse to minimum standards of working conditions:

- Equip a well-appointed Lunch Room with tables, chairs, refrigerator, microwave, coffee maker, etc.
- Provide staggered lunch/tea breaks by shift so that not everyone is on break at the same time.
- Provide a water fountain/container next to the picking and consolidation area.
- Fix the potable water problem – currently, water is not running most days in the morning in the toilets and sinks. This is unacceptable and presents a health hazard.
- Install industrial fans in areas of high activity to keep an acceptable level of temperature in the floor.

In addition to the training required to implement recommendations of this analysis, we recommend the establishment of an employee training program. The program is aimed at improving employee skills, productivity, and morale. Well-trained employees tend to work more efficiently and greatly reduces employee turnover, reducing the investment necessary to bring new employees onboard. We recommend to cross train personnel in all warehouse tasks, and rotate personnel to different tasks in order to increase their skill level. Training improves productivity, increases employee loyalty, and reduces safety risks. Key areas of training include:

- Process Training
- Safety Precautions
- Material Handling Techniques
- General Warehouse Practices