

Distribution warehouse in brisbane research paper example

[Business](#), [Customers](#)



Overview

The proposed warehouse and distribution center is intended to supply Nestle products to approximately 150 major supermarkets in and around the 20-kilometer radius of Brisbane. The products to be stored in the warehouse are composed of fast-moving consumer goods that are sold quickly at a very reasonable price. The storage facility is divided into sections according to product classification such as dry goods and perishable goods. Ambient and temperature controlled areas will have the chilled and freezer facilities to store perishables and an administration office to house the command center, customer service desk and basically all departments that will conduct the day-to-day operations of the distribution center.

The distribution center will be located at the Port of Brisbane because of its immediate access to major highways around the metro (see Figure 1).

Another important factor considered in selecting the location is the expected flow of traffic usually experienced in the location. For instance, the Port of Brisbane has its own road circuit (Port Drive) connecting to Lucinda Drive going to Port of Brisbane Motorway and out to Gateway Motorway. These roads connect to other major thoroughfares such as Southern Crossway, Kingsford Smith Drive and Inner City Bypass. The good thing about these roads is that they are also interconnected to other road systems around Brisbane that will make delivery and transportation of goods easier and faster. In addition the aforementioned routes shows fast traffic as indicated by the green mark lines on the road map (see Figure 2). The importance of determining fast traffic routes is to ensure timely delivery particularly the refrigerated goods that can easily deteriorate during transport.

The total land area occupied by the distribution center is approximately 10,000 sq. m² or around 108 000 sq. ft., an aerial view of the warehouse is provided below for size perspective.

The layout of the distribution center will be divided into the following sections with corresponding number of pallets capacity and size specifications (see figure 4 and 5):

- Two refrigerated storage each with 600-pallet capacity
- Mechanical and electrical room
- Temperature controlled storage with 950 pallet capacity
- Tilt-tray sorter and cart loading with 125 active locations and 3 error chutes
- Future expansion opposite of the tilt-tray for section for individual packing
- Offices and technical control center above the shipping and staging section
- Receiving and processing office above the receiving dock
- Bulk receiving section across the receiving dock
- Secondary sort to pallet for put-away section
- Narrow aisle high rise bulk storage with 5, 720 pallet locations
- Future expansion on narrow aisle high rise bulk storage for 5, 720 pallets
- 3-level pick module plus 68 deep pallet locations for 680 carton flow lanes
- Upper level shelving for 3, 200 carton locations with caged storage for high-valued items with 660 pallet positions
- Extra storage for disposal on floor level beneath the upper level shelving
- Nine receiving docks with three dedicated for refrigerated Pantec trucks
- Nine dispatch docks with three dedicated for refrigerated Pantec trucks

Product Assortment

All the products stored in the distribution center are of food grade and some requires temperature-controlled environment particularly the fast deteriorating products. Stored products are assigned with their unique Stock Keeping Unit Numbers (SKU). Baking and milk products are assigned with 22 SKU's including universal product codes assigned by manufacturers. For example, Nestle Baby products such as NAN Toddler's milk powder are assigned with four-digit identifier (1234). The second part of the SKU will denote the description of the individual product such as 6K1 or interpreted as six one-kilogram can of milk in one box. The SKU's are printed in barcodes that can be read by barcode scanners as it passes through the receiving stage. Similar system are used on other products including the ones that are not included in the distribution center inventory such as Purina, Musashi, Nespresso, Moven Pick and Jenny Craig. There will be 22 SKU's are for variety for a variety of milk and baking products, 130 for meals and snacking, 6 for the cereal, 35 in the coffee, 80 in confectionary and chocolates and 50 in refrigerated and freezer products. All of the products are tracked using DEMATIC warehouse management system including Radio Frequency guns that the system will use to track product information such as batch number, expiration, shelf and pallet location, SKU and quantity. All products are stored according to their SKU codes and kind. The racks are numbered according to SKU first four-digit identifier and stored in rack layers according to first-in-first-out rule determined by the system during retrieval.

Picking and System Flow

The distribution center will be integrated with DEMATIC layer picking solution that will eliminate the manual handling of orders that will ensure efficiency and human error in picking the stocks. The layer picker will be installed in the picking section with an objective to create a safe environment for the people in the warehouse, reduce cost and sustain quality of service. 80% of the volume of orders will be filled by the automated high-density pallet storage and retrieval system while the remaining 20% is to be done by the automated picker and voice picker.

When stocks are delivered to the DC, the process starts by pallet induction from the buffer area to the induction points. The pallets' information is fed to the system, and then the worker will be directed to remove the plastic strap from the pallet. The pallets are fed to the module with two options whether to be fed to the robot for immediate picking or fed to the automated forklift for storage.

Customer orders are filled by transferring products from the storage pallet to the customer's pallet and the layer picker will continue the process of building the customer's pallet. When the stocks are no longer needed, they will be returned to the buffer storage and wait for the next day's run. The robotic module has the capacity to fulfill four-order position simultaneously reducing the time needed to complete an order. Any orders that were not completed by the layer picker are discharged from the system and transferred to another pallet assigned with a unique code to go through the voice picking process to complete the customer's order. After all the layer and voice picking have been completed, the pallets will go through the

automated stretch wrap and pushed to the end of the line for labeling. From the end of the line, the automated forklifts are directed to pick up the pallet and transferred over to the dispatching stage ready for delivery.

Value Adding Activities

It was mentioned earlier that the distribution center layout that certain areas are left blank for future expansion. This is because value added activities will be added to the current distribution and warehousing activities such as specialty packaging, setting and distribution of sales stands and or transport consolidation. Warehousing plays a broad range of strategic role in attaining logistical goals such as shorter cycle times and cost reduction. Meeting customer's demand and maintaining service efficiency requires value chain strategies that will deliver outstanding results. For example, the distribution facility could also provide service of distributing Nestle marketing materials to groceries. These marketing materials will increase the brand's visibility in the end user and in effect would increase their sales and for the warehousing business to continue.

Value chain models include activities that begins in inbound logistics, this process is supported by adequate procurement strategies that involves market analysis determining what product sells the most and procurement department to keep the stocks available for that product. The second stage in the process is operations, which is supported by technology development. These technologies act as support to the activities, it was mentioned earlier that the distribution center will employ the use of DEMATIC warehouse management system and ARSR (automated storage and retrieval system). In

addition, warehousing operations also rely on logistical strategies that include efficient transport system that will ensure timely delivery of orders to customers. An example of technological application that can be integrated to the transportation aspect of the business is to make use of GPRS devices that has the capability to track real-time traffic report and the area and re-routing function to divert the delivery trucks into alternative yet fast routes in case the main road experiences unexpected congestion. In terms of outbound logistics, the value added service that can be included could be transport consolidation. In this strategy, delivery trucks can increase the number of delivery points in a single run. For example, the delivery trucks can do pick-ups of stock replenishment from suppliers if their delivery point is near the pick-up points. This way the distribution center would be able to provide value service to its supplier by saving them delivery trips towards the warehouse. On the other hand, the distribution center would be able to fully utilize its transportation resources to ensure that all merchandise is available in the warehouse in case supplier deliveries missed their schedule. There are several more strategies that the distribution center can adopt and integrate value chain as well into its day-to-day operations.

References

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