

# BROCHURE

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## **I. INTRODUCTION**

Warehousing has emerged as a mounting issue in the realm of supply chain management. Rather than just being a basic storage component for receiving and dispatching goods, it now holds a pivotal role in enhancing value and achieving overall efficiency by offering value-added services and maintaining top-notch inventory management. (Zhenhub, 2022) The remarkable growth of worldwide supply chain networks has prompted a range of subsequent logistical activities, simplifying the benchmarking process, particularly in warehousing. This, in turn, empowers managers to make timely decisions.

VinaTalks Corporation, established in 2010, specializes in manufacturing mobile electronic gadgets. With headquarters situated in both Ha Noi and Ho Chi Minh City, Vietnam, the company designs and offers mobile phones like the highly sought-after models "FlikTikTalk" and "Wok&Talk." These devices are tailored to cater to the Vietnamese market at an affordable price point, presenting a compelling alternative to well-known brand-name phones that are already widely recognized.

With the aim of cutting down on 20% of the total logistics expenses, the company is planning to create an enhancement strategy for its warehouse operations. This initiative commences by examining challenges or difficulties associated with warehouse management, inventory control, and order fulfilment. It concludes with a set of suggestions to prevent or alleviate these challenges.

This report will present a KPI improvement plan suggesting feasible solutions and step-by-step instructions designed to meet the aforementioned objective.

## II. BACKGROUND/RESEARCH = FINDINGS

### 1. Problem Definition

Vinatalks has faced challenges related to the failure of several key KPIs in the warehouse domain. Metrics such as "dock-to-stock," "days on hand," "storage utilization," "items and orders processed per hour," "safety," and "order cycle time" have not met the desired qualifications, causing concerns among Vinatalks' Board of Directors.

### 2. Problem Analysis

#### A. Inventory Management

Measurement	Calculations	Results
Number of Days on Hand	Avg Monthly (\$) Inventory/Avg Daily Sales/Month	<b>**41 Days</b>
Storage Utilization	Avg Occupied m <sup>2</sup> /Capacity	<b>**60%</b>
Dock to Stock	D.T.S. Hours/Total Receipts	<b>**0.75 hours</b>
Damaged Inventory	Damage (\$)/Inventory Value	<b>*0.4%</b>

Figure 1: Inventory Management Table

The initial outcome reveals a warehouse's 41-day inventory holding period, which is an inconsequential figure requiring enhancement. When the warehouse holds an excessive amount of stock, it can result in an extended number of days of inventory on hand. This situation may arise from overstocking, inaccurate demand predictions, or ineffective inventory management procedures. (Ware2go, 2023) Moreover, if the products within the warehouse experience slow sales, it can lead to a prolonged number of days of inventory on hand. With the delays in receiving raw materials or finished products, transportation complications, or bottlenecks in the production process can all result in surplus inventory within the warehouse. In cases where the warehouse lacks accurate and timely information about customer demand, it can lead to overstocking and an elongated number of days of inventory on hand. (Tsang et al, 2018)

Secondly, the storage utilization currently stands at only 60% of the total capacity, which is relatively insufficient. In practice, this percentage frequently fluctuates, typically ranging from 85% to 90% for single-deep racking and between 70% to 80% for double-deep racking. (Envista, 2020) The likely underlying reason for this figure is often the improper allocation of storage locations, which doesn't align well with the product characteristics (Zhang et al 2017). The rapid shifts in consumer preferences and technological advancements have led to a shift towards smaller-order quantities from consumer electronics retailers, resulting in less-than-unit-load warehousing. (Tse et al 2016)

Implementing randomized slotting in this type of warehouse will significantly decrease space utilization. (Malmborg 1998)

The final figure illustrates an extended dock-to-stock process primarily linked to unnecessary procedures, inadequate layout, and manual labour within a warehouse (Lisa, 2021). The activities involved in dock-to-stock encompass product receipt, validation, data updates, and storage. Consequently, any disruption in these tasks can lead to prolonged dock-to-stock durations. (Interlake Mecalux, n.d)

### ***B. Warehouse Performance***

Measurement	Calculations	Results
Orders Per Hour	Picked & Packed/Whse Hours	<b>**4 orders per hour</b>
Items Per Hour	Picked & Packed/Whse Hours	<b>**80-100 items per hour</b>
Cost Per Order	Whse Cost/Orders Shipped	<b>*5.04%</b>
Cost as % of Sales	Whse Cost/Overall Sales	<b>*2.08%</b>
Safety (Accidents per year)	Number of incidents per year	<b>**6</b>

*Figure 2: Warehouse Performance Table*

Regarding orders and items processed per hour, the warehouse falls significantly below the desired standard, managing only 4 orders per hour, a far cry from the benchmark of 25 to 30 orders per hour (Barry, n.d) When it comes to items picked and packed per hour, the warehouse exhibits notably poor performance, achieving only 80 to 100 items, while the standard ranges from 140 to 180 units per hour. (Barry, n.d) This subpar order picking performance can be attributed to several factors, including an extended inter-arrival time for orders due to inadequate storage policies and layout design. (Lee & Kuo 2008; Bukchin, Khmelnitsky & Yakuel 2012) In this particular scenario, the considerable distance between storage and the docking area intensifies the labour and time required for order picking, consequently diminishing the number of completed orders and items picked. Additionally, the comparatively low efficiency may be attributed to the distinctive characteristics of warehousing cell phones. These characteristics include dealing with small orders comprising various items, fluctuating order volumes due to diverse distribution channels, and the need to serve a multitude of delivery locations throughout Vietnam. All of these factors contribute to time-consuming sorting processes. (Chan & Chan 2011)

In terms of warehouse safety, the warehouse exhibited subpar performance in this area, experiencing accidents. It is widely believed that reckless manual handling stands as one of the primary causes of warehouse injuries. (Safety Driven, n.d) The persistent and strenuous lifting tasks carried out without adequate training have had adverse effects on the ergonomic conditions within the facility. Additionally, the convergence of multiple forklift pathways in the middle of the

warehouse can potentially expose employees to severe workplace injuries, particularly when there is no designated pathway for human traffic. (Jona, 2023)

### C. Order Fulfilment

Measurement	Calculations	Results
On-Time Delivery	Orders On-Time/Orders Shipped	<b>*96% On-Time</b>
Order Fill Rate	Filled Complete/Orders Shipped	<b>*90% Complete Orders</b>
Order Accuracy	Error-Free Orders/Total Shipped	<b>*93% Error-Free</b>
Order Cycle Time	Ship Date/Order Date	<b>**4 Orders – 48 hours late</b>
Perfect Order Completion	Perfect Deliveries/Total Shipped	<b>*95.8% Perfect Orders</b>

Figure 3: Order Fulfilment Table

The warehouse has also fallen short of meeting the standard requirement of approximately 98 to 99% on-time shipments, as outlined by Michael Badwi. This shortfall can be attributed to the use of an imperfect supply chain management system, which hinders the seamless flow of information, as noted by Yu and Chen in 2018. Specifically, this weakness leads to delays in transmitting order information between suppliers and customers, placing both the warehouse and production departments in a passive position. Consequently, the production department may not receive complete order information, resulting in an insufficient supply of finished goods for shipping. This, in turn, causes delays in warehouse operations and delivery.

Furthermore, issues related to warehouse performance measurements also contribute to the current situation, prolonging the fulfilment process. Given that on-time delivery significantly impacts customer satisfaction, as emphasized by Zhang et al. in 2019, the low performance in this category places a substantial burden on the company's operations. Managers can gain a deeper understanding of the problem by evaluating the order cycle time, which reveals that there are four orders that were delayed by 48 hours. Similar to the on-time delivery issue, this subpar figure is a consequence of a low number of completed orders and picked items within the facility. Moreover, it suggests that employees have not diligently managed shipping information, leading to the neglect of nearly due orders.

## III. RECOMMENDATIONS & IMPLEMENTATION

### 1. Warehouse Layout Reform

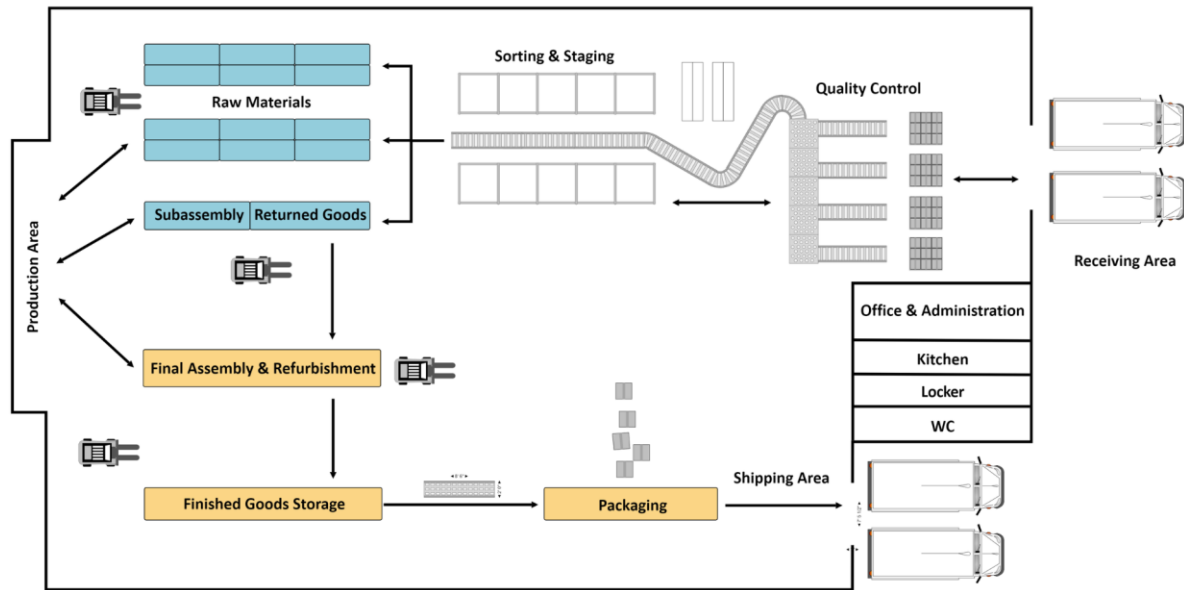


Figure 4: Restructured Vinatalks' warehouse layout

The redesign of a warehouse's layout impacts every aspect of Vinatalks' operations, spanning from the receipt of goods to storage, order picking, and final delivery. Notably, the process of picking alone accounts for more than 50% of the labour in a warehouse. This statistic may not come as a surprise, given that, despite significant technological advancements in warehousing, such as automated storage and retrieval systems, the picking process still relies heavily on human involvement. Consequently, a revamped layout allows Vinatalks to operate with greater efficiency.

- Implementation

To enhance operational efficiency, the warehouse has undergone a restructuring. This involved the separation of Receiving and Shipping areas, positioning them at a considerable distance from each other to eliminate congestion at the entrance and reduce wait times during peak periods. Additionally, Quality Control and the Sorting & Staging Area have been relocated closer to the receiving point, thereby minimizing the time required for product movement. Following inspection and categorization, products are directed to their respective storage zones. The transportation of goods is facilitated by the implementation of three conveyor belts, each serving distinct zones.

Furthermore, the Raw Materials section has been shifted to the upper left corner of the warehouse, with the Subassembly and Returned Products areas placed in proximity. This layout promotes a seamless flow of products, allowing for the allocation of goods to either subassembly or final assembly based on their types after the manufacturing stage. Additionally, items returned by consumers undergo examination before being forwarded to the Refurbishment room. Forklifts play a vital role in the retrieval and transportation of required items to critical areas. Finished products are conveyed to the Packaging Area via another conveyor belt before being dispatched to customers.



This redesigned warehouse significantly reduces the time spent moving products between various zones, resulting in improved efficiency in terms of the number of orders and items picked and packed per hour. Furthermore, the incorporation of conveyor belts and forklifts minimizes the risk of accidents during picking and shipping processes, thus reducing the occurrence of unexpected delays in shipping. Consequently, this restructuring has a positive impact on key performance metrics such as dock-to-stock time, safety, on-time delivery, perfect order fulfilment, and item accuracy rates.

## 2. Warehouse Management System (WMS)

Vinatalks is not only pure products but also in charge of fulfilling customer orders through logistics services. The given information has revealed the Vinatalks' essential logistics activities, including receiving, put away, picking, packaging, dispatching and replenishment. Managing these processes without support from Information Technology systems is unfeasible, especially when a firm is involved in various business activities and swiftly changing markets. (SAP, n.d) A Cloud-Based Warehouse Management System (WMS) is a computer application that enhances overall warehouse efficiency by recording warehouse operations and maintaining optimal inventory levels through real-time stock management. (Julia, 2022)

- Implementation

Implementing a Warehouse Management System (WMS) is a multifaceted process involving various critical stages. The selection of the appropriate WMS solution is a crucial step, and Softeon emerges as a viable choice for Vinatalks due to its specialization in the Technology & Electronics and Consumer Packaged Goods industries, which aligns with Vinatalks' needs (Softeon, n.d). As depicted in Figure 4, the newly designed warehouse layout allows Vinatalks to conduct a comprehensive evaluation of their current processes, infrastructure, and systems to identify areas for enhancement. This assessment guides the identification of key areas where Softeon's implementation will yield the most significant benefits.

Subsequently, Vinatalks can seamlessly integrate this WMS with their existing systems, including Enterprise Resource Planning (ERP) software, inventory management systems, and order management systems, ensuring a smooth flow of data between these systems.

Following these steps, the company can proceed with a controlled pilot test and provide user training for the WMS. During the testing phase, any issues or glitches that arise can be promptly identified and resolved. (Geoff, 2023)

As all the pieces come together, the next step involves crafting a comprehensive go-live plan, encompassing a well-defined timeline, backup procedures, and contingency plans. This meticulous planning ensures that all stakeholders are well-informed about the launch date and adequately



prepared for the transition. Once the WMS is up and running, Vinatalks can continuously evaluate its performance and solicit user feedback to identify opportunities for improvements.

#### **IV. CONCLUSION**

With a core objective of delivering high-quality products at competitive rates, Vinatalk places a strong emphasis on managing the total production process cost effectively. In pursuit of reducing overall logistics expenses by 20%, the company is strategically addressing cost inefficiencies within both the production and warehouse processes.

Before delving into solutions, it's important to highlight several warehouse management issues that require attention. These include extended Dock-to-Stock times, high number of days on hand, high costs associated with each order, safety concerns resulting in a notable number of annual accidents, delays in on-time deliveries, and suboptimal completion rates for perfect orders.

To address these challenges, this paper proposes a range of solutions, including the redesign of warehouse layouts and the application of a warehouse management system. These measures collectively contribute to the minimization of the overall cost of warehouse management. This is achieved through the implementation of improved layouts that facilitate smoother workflows and a heightened focus on safety measure with the incorporation of advanced technologies.

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