

**HANOI UNIVERSITY OF SCIENCE AND TECHNOLOGY**

# **GRADUATION THESIS**

**Inventory rotation using RFID automated inventory  
in logistics warehouses**

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# ABSTRACT

Logistics warehouses have become important players in the supply chain. The features that are shared include item management and time-limited storage. Managing the flow of goods into the warehouse from the processes of exporting, importing, storing, or rotating items is the most crucial activity in warehouse, especially in automated and private warehouses. To improve the accuracy of inventory results and synchronize the management system at the logistics warehouses, automatic inventory methods must completely replace manual methods. Also, inventory rotation is necessary because commodities engage in continual import-export activities throughout the day, resulting in disorganized arrangements that interfere with other operations and goods management. Moreover, it has become common for Amazon, Uniqlo and Zara to manage inventories and warehouses utilizing RFID.

Many apps, such as Sapo, Misa, SAP provide inventory management with inventory functions, but the most of them do not meet the needs of logistics warehouses. Because the inventory process is carried out manually, the results do not adequately reflect the number, quality, and current condition of the items, which is time and labor intensive. Also, the goods sorting function does not take into account the real storage condition to provide sorting recommendations, efficiently utilize storage space, track, or control goods. Besides, the DxClan system connects departments in private logistics warehouses and offers efficient warehouse management capabilities, but it lacks the capability of automatic inventory, inventory rotation.

This thesis has suggested a solution to employ RFID to automatic inventory in logistics warehouses and from the inventory results, suggests inventory rotation to bring practical benefits for businesses. I chose the topic "Inventory rotation using RFID automated inventory in logistics warehouses" for my graduation project. The thesis focuses on developing a built-in automatic inventory module that integrates into the DxClan digital workspace management system with newly developed features such as (1) automatic inventory of goods in the warehouse using RFID tags and reader, (2) suggest inventory rotation based on inventory results in the warehouse. Also, two components of the DxClan system's initial functionality have been updated and modified, including (3) generating and assigning RFID codes to goods during import processing, (4) search for and track product changes before and after import-export process and rotating the warehouse. The program has been installed on the DxClan system and tested successfully using a data set, a set of hardware (a reader at 13.56 MHz and 20 RFID tags).

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