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# Radio Frequency Identification (RFID) and its benefits in the Warehousing industry.

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# 1. Chapter 1: Introduction

## What is Radio frequency identification (RFID)?

**RFID (Radio Frequency Identification)** is a technology that can transmit the data stored in a microchip through radiofrequency signals. It includes a defined protocol that stores and recovers information remotely, using tags, cards, ETC.

RFID is ideal for the processes of warehouses or **distribution centers**, as the functions performed in them are always related to products and goods that have tags with necessary information. With this technology it will be simpler to monitor goods and know their origin and destination.

These data are identified instantly and without any human intervention, providing major time, efficiency and safety savings.

### **RFID applications and uses in the warehouse**

When identifying, tracing and managing the product error-free in each logistics phase, RFID tags facilitate this work, as warehouses increasingly demand greater efficiency and agility. This system offers the warehouse infinite possibilities. Apart from the control of goods, other processes such as the entry of trucks, handling equipment, etc. can be controlled too.

The purpose of using (RFID) in industry or our life is to automate and allocate all types of objects with lower cost and high efficiency, as an example of real life, Road Transport Authority (RTA) in United Arab Emirates (UAE) uses RFID by adding tags to each car and on the roads the tag readers are fixed to collect road tax from customers, Supermarkets & Shops on other hand place the tags on there goods to make sure noting passes the gate without passing the casher.

So meany examples can be given for (RFID) applications in our privet life or industry.

## 1.1. Research Background

The functionality of warehouse requires several steps and control measurements to be followed and implemented:

- Shipping and receiving process.
- Issue and binning (material) process.
- Cycle count process.
- Surplus and disposal process.
- Handling material process.
- Security process.

All above require manpower, suitable Material System and warehouse management system to be implemented, with RFID all above will be automated and controlled.

### **Advantages and benefits of RFID in a warehouse**

RFID technology provides a wide variety of advantages for warehouses. Their operations improve if the processes are automated for increased profitability, resulting in labor and time savings.

Some of the main benefits of using RFID systems in a warehouse are:

- **Product customization**

Thanks to the data collected in the chip included in each product, the products can receive a customized and unique treatment. Accordingly, the information on each unit in movement in the supply chain is controlled and centralized at all times, simplifying decision-making.

- **Agility and timesaving**

This technology significantly improves the efficiency of all processes compared to barcodes and other more traditional methods. Moreover, workers save time as product inventory is automated and faster. This would be one of the main benefits of RFID.

- **Automatic registration**

When all the products in the warehouse are registered using this technology, the inflow and outflow processes, expiry, errors, etc. will be automatic. This speeds up the whole process of reducing errors, from product selection through to shipment to the customer.

- **Tracking and traceability**

The products will always be under control, and thanks to their built-in GPS it will be quick and simple to identify and locate the goods without the need for a visual line between the reader and the tag. In terms of traceability, in this publication we talk about the [traceability systems for industrial racking](#).

- **Authenticity and veracity**

Each product has its own unique information which gives it authenticity and veracity. This is one of the major advantages of RFID technology.

- **Inventory and replenishment**

It provides greater inventory control avoiding a [stockout](#), as it will inform us when there is a shortage of items, when items are in the wrong location and when they are defective. The application of RFID technology improves and speeds up the stock management process in a warehouse.

## **1.2. Research Problem**

Although in general terms these technologies provide advantages and mark a step forward for the sector, as with all innovations they also bring with them a series of challenges and difficulties that may be negative points when considering their application.

### **1.2.1. Theoretical Gaps**

Most of warehouses is equipped with warehousing systems such as SAP or Oracle, or other types of systems, therefore the system might not be compatible to interface with the systems.

### **1.2.2. Practical Gaps**

All automated systems has practical gaps, such as System offline, electrical power off, System upgrades, ETC that's why we need a backup plan to avoid any system outage.

This section ends with the main research question

### **1.3. Research Significance**

In this section, the student should clarify the importance of the study at the theoretical level, and the empirical level

#### **1.3.1. At the theoretical level**

#### **1.3.2. At the practical level**

### **1.4. Research Questions**

### **1.5. Research Objectives**

### **1.6. Research Hypotheses**

## **1.7. Research Model**

## **1.8. Research Methodology**

## **1.9. Scope of The Study**

## **1.10. The Suggested Project Structure**

## **2.Chapter 2: Literature Review**

## **2.1. Introduction**

Brief introduction for the chapter

## **2.2. The independent variable**

## **2.3. The dependent variable**

## **2.4. The relationship between the independent and the dependent variables**

## **2.5. Conclusion**

## **References**

- [RFID technology applied in a warehouse and logistics | AR Racking \(ar-racking.com\)](https://ar-racking.com/)
- [An introduction to radio frequency identification .pdf \(researchgate.net\)](https://researchgate.net/publication/312111111)
- [RFID Warehouse Management: Streamline Operations \(cyzerg.com\)](https://cyzerg.com/)