https://www.industryweek.com/cloud-computing/article/21993823/3-inventory-control-problems-that-may-be-caused-by-your-legacy-erp
Problems caused by legacy systems.

challenges of warehouse management

- Excess stock. ...
- Lack of space. ...
- Low traceability and connectivity. ...
- Excess procedures. ...
- Incorrect time **management**. ...
- Inaccurate **inventory** and outfitting. ...
- Delays in the gathering process. ...
- Damaged products.
- High cost of inventory
- Consistent stockouts
- Low rate of inventory turnover
- High amount of obsolete inventory
- High amount of working capital
- High cost of storage
- Spreadsheet data-entry errors
- Lost customers

1. Limited visibility
2. Varied customer demand
3. Inefficient processes
4. Managing people and space
5. Increasing competition from warehouse management companies.
6. Supply chain complexity
7. Indisciplined employees
8. Not being able to count inventory often
9. Unavailability of good/ timely vendors
10. Absence of performance measuring parameters.

https://www.unleashedsoftware.com/blog/causing-inventory-management-problems-avoid

https://www.netsuite.com/portal/resource/articles/inventory-management/inventory-management-challenges.shtml

https://www.apsfulfillment.com/product-fulfillment-services/common-challenges-in-real-time-inventory-management/

Common challenges and solutions:
https://www.netsuite.com/portal/resource/articles/inventory-management/inventory-management-challenges.shtml

**relevant to the case as a whole:
https://www.unleashedsoftware.com/blog/migrate-clients-cloud-inventory-management

https://www.unleashedsoftware.com/blog/4-features-inventory-management-software-needs

How to improve Inventory management
https://www.unleashedsoftware.com/blog/four-proven-ways-streamline-inventory-management

Common inventory problems:
https://www.primaseller.com/blog/common-inventory-problems/

**Idea for solution to proper entry/ management/ checkout of goods.
Adapt a system similar to **Amazon Go**
https://www.geekwire.com/2016/amazon-go-works-technology-behind-online-retailers-groundbreaking-new-grocery-store/

Points from
https://www.mckinsey.com/~/media/mckinsey/dotcom/client_service/retail/articles/future_of_retail_supply_chains.pdf

1. Retailers do not have enough distribution channels to cover a large area cost-effectively.
2. Retail supply chains are optimized for stores instead of online businesses, which causes poor cross-channel coordination across specific inventory pools and fulfillment processes, causing higher stockouts and markdown in peak seasons.
3. Increasing the variety of products to compete with online businesses has lead to an increase in the usage of SKU's(stock-keeping units), which in turn has lead to cost and capacity challenges.

Spreadsheets and manual inventory tracking

Manual inventory management practices such as using Excel is usually the first tool small-to-medium sized businesses use to manage their inventory. While spreadsheets and the likes work fine in the beginning when you're a small operation, they can quickly lead to crippling issues.

In the same way, manual inventory tracking and stocktaking can be suitable for small businesses but again become time-consuming and erroneous as your company grows. Not only does this impact your business's ability to foster growth, data errors can have snowballing effects.

For example, there may be a wrong quantity recorded in an SKU. As a result, you order 1000 units instead of 100. If this 1000 does not sell, this becomes wasted capital and can have very costly implications for the business.

Large inventory volumes

Large volumes of inventory can lead to management nightmares as they can cut into your profits. Most businesses have 20 to 40% of their working capital tied up in inventory stock. Inventory reduction is difficult to do, but it is essential if you want to go from poor inventory management to great inventory control and management. Here's how you can reduce your stock.

Inadequate forecasting

If you are not using accurate data to identify sales trends, best-selling items, customer behavior, and more, you'll either order too much and experience the problems of excess inventory stock, or order too little and experience stockouts and lost customers. With accurate reports, you can better forecast your customer's future behavior and order accordingly to meet customer demand.

Keeping tabs on inventory in warehouse not only wastes time, but also increases labor cost. Manual inventory systems fail to sort and label inventory in a systematic manner. This can result in misplaced, unused and outdated inventory.

Inventory management software incorporates an elaborate barcode and cross-checking mechanism that sorts and tracks inventory throughout the supply chain process.

Benefits of RFID:
https://www.corerfid.com/rfid-technology/what-is-rfid/benefits-of-rfid/#:~:text=RFID%20is%20a%20very%20cost,cost%20of%20the%20initial%20outlay.

Research Paper for on-site inventory tracking:
https://www.emerald.com/insight/content/doi/10.1108/13598541011040008/full/html
Abstract:
This paper aims to describe how performance in the project supply chain can be improved by implementing information technology solutions that track site installation and inventory.

All about RFID and how Amazon Go is using it.:
https://www.autodesk.com/products/eagle/blog/amazon-go-rfid-automation-dilemma/#:~:text=Amazon%20Go%20has%20a%20RFID,products%20you%20buy%20and%20how.

Inventory tracking through IoT:
https://link.springer.com/chapter/10.1007/978-981-13-5758-9_4
**But the research paper is accessible only via subscription.

Implementing an Effective Inventory management system:
https://www.emerald.com/insight/content/doi/10.1108/EUM0000000000376/full/html
**the research paper is accessible only via subscription.

Cheaptracking methods and verification checkpoints

IoT tracking solutions:
https://www.camcode.com/asset-tags/iot-asset-management-tracking/
Research paper: IoT in supply chain management.
https://d1wqtxts1xzle7.cloudfront.net/56617116/IJET-V4I2P148.pdf?1526898472=&response-content-disposition=inline%3B+filename%3DUsing_IoT_in_Supply_Chain_Management.pdf&Expires=1616924548&Signature=EudyaHWpK5cv0E3HiPNu0AytEmUqhBGK2SFR9V16KwbJhuvZl3ivPQ-BwPoXzzKh1l6Nq~U-wndY9Oss6vmclC6wWp5SCu-~cj2jzKYzC2l-eoiuvPxyUn0JxF3tNhyVZp3cSBrA~MnhHl1l9LZlJUw-Ma9rGaPdFzm~8q3NwtMuChkakrhktdV~rF6eY-gewg4SfB~dsxsp5p2riV81MMGaRMEZFm7lQUcjOkyi8rrmYd6QpsO~J-5Poaap52jlUEmr9e6u4OBqFUo4Usl6Tx6fUkVqO03ES7TuJBamoHTjowteOGGXrjBhyPKqT8CZ3d~L1peHNtb8-FLU-UVdlw__&Key-Pair-Id=APKAJLOHF5GGSLRBV4ZA

** Important research paper:
https://www.sciencedirect.com/science/article/pii/S1877050915017329
This compares legacy systems with upcoming and current advanced systems like cloud computing and IoT.

https://www.duotraq.com/iot-tracking-systems.asp

** Feasibility of BLE tags (IoT application).
https://core.ac.uk/download/pdf/329117487.pdf
BLE asset tracking:
https://simply-unified.com.au/asset-tracking-with-bluetooth/#:~:text=Manufacturing%3A%20Bluetooth%20Low%20Energy%20technology,can%20also%20measure%20their%20efficiency.

BLE vs RFID:
https://kontakt.io/blog/comparing_rfid_and_bluetooth_tags/#:~:text=BLE%20tag%20readers%20(like%20Gateway,Wi%2DFi%20or%20RFID%20equivalent.

Checkpoints in delivery
Manufacturing.
(Export)Sea Port/ Airport.
(Import)Sea Port/ Airport.
National Hub
Regional hub
District.
Local delivery hub/partner office.
Customer