Question – What does inventory management look like in distribution?

Research Questions –

1. How is technology utilized in distribution?
2. How has the presence of automation been changing?
3. How do predictive analytics contribute to reducing waste and improving efficiency in inventory management?

|  |  |
| --- | --- |
| Blog Posts | Level 1 Source 1 |
| Source #1 | The blog post “14 top management tends to know in 2023” by NetSuit discusses the importance of distributing inventory across multiple warehouses to reduce transportation costs and improve deliver times. It emphasizes the need for data analysis to position products strategically and using technology to direct suppliers in splitting shipments appropriately. The blog also discusses that larger businesses utilize ERPs or enterprise resource planning software. Software’s such as warehouse management systems help businesses manage their inventory more accurately, reducing waste, both on the material and labor front. The blog post also discusses the trend towards AGVs and AMRs. The trend towards AGVs and AMRs is very present and currently growing extremely rapidly, especially as AMRs have improved, making it more cost effective compared to AGV and ASRS systems. Moreover, predictive picking is becoming a lot more popular as with more complex data analytics it is much more successful.  NetSuite. **"14 Top Inventory Management Trends to Know in 2023."** *NetSuite*, Oracle, 2023, <https://www.netsuite.com/portal/resource/articles/inventory-management/inventory-management-trends.shtml>. Accessed 28 Feb. 2025. |
| Source #2 | The article “What are the latest innovations in Distribution Warehousing?” by Granby Marketing highlights the role of warehouse management systems (WMS) in modern supply chains. It points out that WMS software offers real-time visibility into inventory, streamlining picking and packing processes and enhancing resource utilization and analytics. The article dives into the benefits of good WMS, these systems can prioritize the process and order within the warehouse significantly improving quality and efficiency. Moreover it does mention the benefits of ASRS and AGVs however in both of these blogs they do not mention any drawbacks.  Granby Marketing. **"What Are the Latest Innovations in Distribution Warehousing?"** *Granby Marketing*, 2023, <https://www.granbymarketing.com/useful-articles/what-are-the-latest-innovations-in-distribution-warehousing/>. Accessed 28 Feb. 2025. |

|  |  |
| --- | --- |
| Newspaper Article | Level 1 Source #2 |
| Summary | In the newspaper article “Amazon bets savings from automation can help fuel AI spending boom” by Financial Times highlights the benefits automation can have in warehouses and in delivery of product. The article dives into how Amazon plans to spend significant amounts in continuing to automate their warehouses. Much of this automation is going to be in the form of regenerative AI. Amazons’ significant investment into this for the last couple of years has proved successful and has allowed them to evolve their automation elements to include delivery robots. Moreover, Amazon has begun bringing all of the development of technology in house.  Uddin, Rafe. "Amazon Bets Savings from Automation Can Help Fuel AI Spending Boom." *Financial Times*, 26 Feb. 2025, <https://www.ft.com/content/50b7ecc3-08de-433a-9a5b-6d6590cf8179>. |

|  |  |
| --- | --- |
| Magazine Article | Level 1 Source #3 |
| Summary | In this article about the “Top 10 Trends in Inventory Management” by manufacturing.net it highlights the use of AI, cloud-based inventory systems, IoT sensors, automation and predictive analysis. The use of cloud-based inventory systems has become paramount to the success of many businesses. These provide real-time updates facilitating efficient processing of inventory and more accurate job management. By enhancing this process and utilizing a cloud-based system companies can potentially pack and ship the same orders out of different warehouses depending on who gets to it first. This allows for one warehouse to help another recover if necessary. On top of this, predictive analysis is rapidly gaining popularity. Software’s such as PowerBI, and Tableau have been credited with much of this gain but on top of these there are now software’s that contain these analysis within them. Many of these inventory management systems are starting to do this analysis.  O'Kelly, John. "Top 10 Trends in Inventory Management." *Manufacturing.net*, 5 Aug. 2024, <https://www.manufacturing.net/operations/blog/22916879/top-10-trends-in-inventory-management>. |

|  |  |
| --- | --- |
| Trade Journal | Level 2 Source #1 |
| Summary | In this study we see the authors exploring the idea of an integrated approach to inventory management. They highlight the various technologies applicable across different industries and distribution systems. The research aims to achieve a competitive edge by reducing costs and increasing service quality. They can do this by emphasizing the impact of total logistics costs, including transportation, facility and inventory related expenses, on the company’s competitiveness. They go into how by analyzing this total logics costs they can get many indirect benefits such as inventory smoothness.  "Integrating Inventory Management and Distribution: A Holistic Supply Chain Strategy." *ResearchGate*, 2024, <https://www.researchgate.net/publication/381474306_Integrating_Inventory_Management_and_Distribution_A_Holistic_Supply_Chain_Strategy>. Accessed 28 Feb. 2025. |

|  |  |
| --- | --- |
| Ted Talk | Level 2 Source #2 |
| Summary | In the Ted Talk “How to Fix Broken Supply Chains” by Dustin Burke the presenter addresses the persistent challenges in supply chains, emphasizing that while disruptions are inevitable, there are strategies that exist to increase reliability. The author highlights some of the strategies you can use to minimize disruptions. One of the examples of this is building buffers also known as maintaining stockpiles or safety stock, to mitigate shortages. He does not that companies are hesitant to do this due to costs and competitive pressures. Instead, he advocates sharing risks through alliances and pooling resources. This can offer more efficient and cost-effective solutions. He also underscores the necessity of radical transparency, suggesting that companies should have a very comprehensive look into their suppliers and their suppliers’ networks to manage risks. With the advancement in data analytics this is way more successful.  TED. "The Power of Vulnerability." *YouTube*, uploaded by TED, 3 June 2010, <https://www.youtube.com/watch?v=y_EjCSz1aBo&ab_channel=TED>. |

|  |  |
| --- | --- |
| Academic Journal Article | Level 2 Source #3 |
| Summary | In this article “Supply Chain Inventory Management from the Perspective of ‘Cloud Supply Chain’—A Data Driven Approach” the authors dive into the benefits of a cloud-based framework. The authors go into that by utilizing a cloud-based framework its more scalable, and flexible. Effectively lower risk and allowing inventory pooling to occur more efficiently. On top of this, it allows for a more agile supply chain which should intern allow greater reliability. Moreover, we should be able to make more data-driven decisions whether through AI or manual analysis. Beyond all of this, utilizing cloud-based systems can allow for automated inventory replenishment based on future orders. This means that by the time we ship product x, the replenishment could already be half way to replenishing that inventory.  "Supply Chain Inventory Management from the Perspective of 'Cloud Supply Chain' Operations." *Mathematics*, vol. 12, no. 4, 2024, p. 573. <https://www.mdpi.com/2227-7390/12/4/573>. Accessed 28 Feb. 2025. |