

# **The Challenging Landscape of Inventory Management**

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*Inventory management is a critical practice that organizations occasionally review to ensure that it aligns with their overall objectives and strategies. The main processes of inventory management involve ordering, storing, and managing raw materials, finished products, and other vital components that require processing and warehousing. The size of the organization does not affect the need to have an advanced inventory management system, but it is worth identifying that some organizations have intricate supply chains due to the complexity of their manufacturing processes, and the need to balance the risk of improper inventory controls. This paper will go over some of the practices of inventory management and how companies utilize and benefit from them, as well as how new technology is shaping the field.*

*Keywords: inventory management, e-payment, internet of things, operations management*

## **INTRODUCTION**

Achieving a balance is a significant challenge, and out of the new inventory management processes that keep arising, the just-in-time strategies emerge as the most ideal, though I will discuss other strategies. The emergence and advances in technology have led to the automation and integration of the inventory management process to enhance the operations of materials requirement planning and processing.

Downey, McMurtrey, and Zeltmann (2008) identify that the use of computers in computer science and Management Information Systems continuously changes the kinds of employees, business fundamentals, and processes used within organizations. Realizing that the challenge is prevalent in the business world, inventory management is not exempt, and it explains why the market has to continuously evolve to perform and meet the goals and objectives it sets (Younis, Turner, & Tiwari, 2013). Computer science and Management Information Systems have enhanced inventory management by making it more systematic and competent in obtaining, storing, and profiting from non-capital assets, finished goods, and

raw materials they acquire. They assist businesses in having the right stocks or products, in the required quantities, at the right place, time, and costs.

This advantage has enabled entrepreneurs, independent brands, and founders in a native commerce world to freely compete, small, medium, and global conglomerates (Baron, Berman, & Perry, 2010). The advantage of technology shows that the inventory management platform is even, and businesses can grow their brands with scalability, speed, and smart insights. However, the penetration of technology in a society determines its effectiveness, and developed economies that boast of advanced technologies increasingly find themselves dealing with the elderly population that is not highly receptive to new trends. Therefore, computer science and management information systems improve business operations, competitions, market penetration, and the management of stocks, but still faces its own challenges.

### **The Importance of Inventory Management**

Inventory management is a valuable exercise that has improved the management of stocks, reduction of theft, increase in profits, improvement in meeting customer and supplier needs. The numerous benefits enjoyed by different stakeholders shows that the value of inventory cannot be overstated because it offers operational longevity and efficiency (Younis, Turner, & Tiwari, 2013). Enterprise Resource Planning (ERP) shows that there are benefits that can be realized as well as challenges that include blown-out costs, poor customer service, loss of profits and outright failure in some instances (Sui, Z., Gosavi, & Lin, 2010). The challenges indicate that from a product perspective, inventory management is important and the integration of technology helps in realizing cost reduction, optimization, providing better customer service, prevention of loss, spoilage, and returns that affect business.

The capability to manage different inventories is a complex process that previously required a business to invest in more highly skilled staff, but this has changed with the advancement in technology and the emergence of computers. Some companies have to manage different inventories such as raw materials, work in progress, finished goods and the maintenance, repair, and operations inventories, which would be difficult without advanced computer software. Raw materials are the items that businesses use to produce finished products and can be sourced from a supplier or be directly generated.

The work-in-progress inventory manages the unfinished goods that have to go through the production process before becoming finished goods and fall under the different stages of production. Once the work-in-progress goods are completed, they become finished goods and any business must manage them because they guarantee returns that would cover raw material costs, work-in-progress management, and production costs among others that would cripple a business if not recovered.

### **Bundles**

Businesses with broad product portfolios can develop several organizational building blocks that are identified as Stock Keeping Units (SKUs). SKUs guide the issuance of invoices, lists, and order forms. The availability of different technologies also enables businesses to set-up specific SKUs so their business can identify products, and differentiate product variants such as stock availability, product type, and location. They also can locate margins, sell rates, profitability and the lack thereof, and inventory shrinkage that may arise from spoilage and theft, among others. Common features that computerization has enabled the barcode scanner that is used to manage check-in and check-outs of stocks (Sui, Z., Gosavi, & Lin, 2010).

Bundles refer to a group of products that a business may choose to sell as a single product, and it may categorize them together to avoid inventory challenges that may arise from customer complaints that one of the items was missing (Berman, Krass, & Mahdi Tajbakhsh, 2011). Therefore, any business must realize that technology enhances the capability to manage inventory, and choose to integrate them into the strategies, processes, and techniques they prefer. We will talk about Just-in-Time inventory systems, Par Levels, the First In First Out method, why managing relationships are important, drop shipping, contingency planning, and auditing.

### **Just-In-Time**

The just-in-time inventory system is one that aligns ordering materials from suppliers with the company's production schedule. Just like other inventory management systems, it is used to increase efficiency inside of factories, which means reducing waste, which in return reduces overall production costs. The main idea of this system is to reduce the amount of inventory that your company has on hand at any given time, which, as stated, increases efficiency.

JIT is also known as the Toyota Production system, because this is the company that coined the method. Supposedly it took them over 15 years to perfect it, and the company needed many things to happen in order to succeed. Those included: no machine breakdowns, high quality workmanship, quality forecasting, reliable suppliers, quick ways to assemble the machines that assembled the vehicles, and steady production. Toyota started this process in the 1970s. We will discuss later how technology could have sped up this process.

### **Par Levels**

Technology enhances the capability to set par levels, which makes inventory management more accessible and more efficient. The par levels ensure that a company maintains the minimum amount of any product that facilitates the smooth operation of a business and helps meet the supply and demand needs. Identifying the levels and integrating them into a computerized system ensures that when stock levels dip, the inventory management team is notified and they can initiate the process of reordering to restock. Restocking may affect the cash flow within an organization if a lot of stock is withheld without allowing the business to enjoy an economic benefit. (Baron, Berman, & Perry, 2010)

Ideally, the automation ensures that that the reordering gets the company above par without overstocking or being understocked. Additionally, it helps in monitoring how quickly a product sells or how the raw material is used to facilitate the process of getting back the stock levels. Moreover, different seasons influence the par levels and allow those managing the inventory to change them over time without exhausting the top management with such changes. Therefore, despite the requirement to set the par levels requiring research and immediate decision making, setting them ensures that the whole process is systemized, thus saving on time and requiring fewer staff to manage the inventory.

### **First-In First-Out**

The first-in first-out principle is highly favored in the management of inventory and ensures that the oldest stock is the first to leave the warehouse when compared to the new stock. The strategy is highly efficient for perishable goods, thus saving the business losses arising from unsellable spoilage. The approach is ideal even for other goods because it helps in managing the release of goods according to the batches and in case of any product concerns, follow-up becomes easier when compared to the other processes of handling the commodities. Product quality is guaranteed immediately after acquisition or production, and failure to avail it directly to the market leads to the supply of an inferior product (Baron, Berman, & Perry, 2010). The packaging may get worn out or altered through design and features, thus rendering the product unsellable. Time is an essential factor that businesses must capitalize on because changes are inevitable, and they may alter the dynamics of doing business, which makes the first-in first-out principle of inventory management ideal.

Physical management of stock and ensuring that the oldest stock is sold first is hard, because workers lack clear cut criterion such as batch numbers to follow up. With an automated inventory management system, it becomes much more manageable. The acquired inventory and those that manage them do so through the batch numbers and manufacturing expiry dates, thus ensuring that a business never finds themselves with a product that has deteriorated in quality and is unfit for the market (Baron, Berman, & Perry, 2010). Therefore, inventory management is an intricate process that should require automation. Proper management guarantees business success, and profitability without compromising on the quality, and automation helps to do that.

## **Internet of Things**

The Internet of Things (IoT) Is a growing concept that could have a significant impact on supply chain management. IoT is a term used to describe a shift in how the internet is being used to connect “things”. The IoT is more than just listing everything connected to the internet, it is more about defining objects that exchange information semi-autonomously (Ben-Daya, Hassini, & Bahroun, 2019). IoT includes four essential layers: (1) a sensing layer (RFID tags, sensors, cameras), (2) a networking layer, (3) a service layer that manages applications and service through middleware, and (4) an interface layer for the user to interact with the system (Xy, He, Li, 2014). For example, our refrigerators can now monitor, track usage, and our food when we get low. A myriad of items in our home and personal lives can also communicate with each other (e.g., smart homes with lightbulbs, switches, doorbells, and security systems). All of these “things” also generate a tremendous amount of data that businesses can use to improve efficiency, manage logistics, and perform data analytics and inventory management optimization. IoT is still developing and several gaps in the literature exist before it’s true potential to inventory management systems can be realized. There is a lack of implementation frameworks and models necessary to properly implement the IoT into an inventory management system (Ben-Daya, Hassini, & Bahroun, 2019). Also, security and information privacy are major concerns when so many devices have access to our personal habits and behaviors. These two gaps exacerbate each other. A lack of well-defined standards for IoT implementation increases security risks but the lack of mainstream visibility into the data collected by IoT devices does not raise security flags businesses normally rely on.

## **Management of Relationships**

Inventory management is an integrated process that is dependent on several factors, and relationships between decisions and actions. Adapting quickly ensures that inventory is up to date, and involves checking the slow and fast-moving products and striking a balance in restocking. Whether it is returning a slow-moving item to create room for new products, restocking the fast-moving products, troubleshooting any manufacturing issues, or the expansion of the warehouse, it all requires an understanding of the relationship between the business and different suppliers. Establishing the nature of the relationship helps identify ways to resolve challenges being experienced without creating any conflict.

Business relationships are different from individualistic relationships, because they are founded on the capability to clearly and proactively address issues regardless of its complexity, and also reaching an agreement that does not affect each other's business and profits. There are instances where suppliers help run promotions that improve product movement for slow-moving commodities, thus creating a win-win situation that promotes continued business (Shah, & Shin, 2007).

Additionally, some of the most successful companies thrive from maintaining a good working relationship with suppliers, because it helps them identify when to make specific orders depending on available discount levels, and free goods that help in making them competitive. The connections are promoted through technological advancements such as written email and phone conversation without the individual ever meeting at times, and this ensures that the relationships are founded on business practices.

Inventory management cannot be dissociated from the establishment of meaningful relationships that guide decision-making without affecting the realization of profits in the long run (Shah, & Shin, 2007). Therefore, establishing the nature of the relationship helps identify ways to resolve challenges experienced without creating conflict.

## **Contingency Planning**

Inventory management is often faced with a lot of challenges, and they can cripple the operations of any business if they are left unfound. Several factors are unforeseen, such as the unexpected spike in sales leading to overselling, running into a cash flow shortfall is another challenge that is often experienced and creates the inability to purchase the desired product (Shah, & Shin, 2007). Additionally, limited warehousing space to accommodate seasonal spikes in sales is another challenge. Miscalculation of inventory may lead to insufficient stock levels, slow-moving products may take up storage space, or a

manufacturer may run out of products due to increased demand which affects business (Plinere, & Borisov, 2015).

Moreover, the manufacturer can discontinue a product causing a sudden rise in demand with zero supply, and such hiccups should be foreseen through proper stock management. Close follow-ups with the acquired stocks and what is sold require a competent team of staff and an advanced system that gives real-time information to avoid pop-up related inventory management challenges. Creating a plan on the steps to take when faced with a specific challenge prepares the business to respond appropriately to impact the company positively. Therefore, a contingency plan ensures that robust strategies and relationships are founded to cushion the company from unexpected challenges that can cripple operations.

### **Regular Auditing**

The reconciliation of inventory is critical and the process that most advanced organizations use to rely on information from software and reports. Regular audits cushion businesses and help it avoid unforeseen shortfalls and cash flow concerns that may arise from incorrect information which may happen when handling inventories. Identifying how much inventory is available relies on several actions that include spot-checking, physical counting, and cycle counting. Cycle counting entails confirming all physical stock, and some businesses prefer the methods despite still automating most of the inventory management processes (Plinere, & Borisov, 2015). Companies identify a cycle which could be weekly or monthly to physically check different products, but high-value products are counted more frequently compared to the rest.

Spot checking is useful for large businesses which may become cumbersome to run a physical check at the end of a financial year. The spot checks are random, and the figures obtained are compared to those reading on systems and records to establish whether they tally. Spot checking does not equate to supplemental or scheduled physical inventory counting, but it is conducted on problematic and fast-moving products that management wants to obtain information about (Tripathi, 2018).

Physical inventory involves counting the inventory concurrently, and this is done at the end of every business year. The findings help in the payment of income taxes and accounting purposes, but it is often deemed incredibly disruptive and tedious. The process helps identify discrepancies that are challenging to trace back to a whole year's business activities. However, it is a useful inventory management tool that businesses continue to use to help identify cases of software manipulation and theft. Therefore, regular reconciliation is essential for any business that desires to realize success and sustain its operations, achieved through proper inventory management.

### **Dropshipping**

According to McMurtrey, Downey, Zeltmann, and McGaughey (2013), technology behaviors sharply contrast between the young and the old, which may affect how the management of inventory is conducted. The elderly population is identified as the group above 65 years of age, and they form the fastest-growing demographic group in developed economies. Additionally, the group is not technologically savvy when it comes to new and emerging trends, which poses a significant challenge to the use of technology to operationalize different stock management process. Additionally, the process of handling stock delivery has changed over the years, and the capability to keep up with the emerging technology appears to be a big challenge that an elderly population would face.

Dropshipping is an emerging inventory management criterion that allows a business to carry inventory and ship products through third-party logistics or internally (Addison, 2017). The manufacturer or the wholesaler takes care of the costs, and it helps in removing the inventory management process from a business. The inventory management perspective is efficient because it also allows firms to test new inventory before making the decision to invest in big orders, which makes it an essential addition to any business. The willingness to identify, test, and implement new and emergent trends such as drop shipping that may be optional for clients.

Despite the shipping cost being added to the products in the case of drop shipping, it has proven to be a convenient way to save on time by availing products to the clients' destination. The costs are

insignificant for bulky goods and businesses can use them to improve customer relations and the ease of doing business. Therefore, emerging trends such as drop shipping are highly dependable but become difficult to implement in economies that have a higher population of the elderly because they do not readily embrace new technologies when compared to the young.

McMurtrey, Downey, Zeltmann, and McGaughey (2013), further explores the purpose of computing among the elderly in society and pinpoints access to computers and internet use. Figures show that 55% of the sample group used the internet to stay in touch with their families. Additionally, 36% sought medical-related answers from the internet, 32 percent to keep up with emerging events, 31 percent to conduct banking operations, and 29 percent to research products. An analysis of the findings shows that family was the primary motivating factor for them to use the internet and the research of products was dismally represented at 29 percent, which emphasizes how complex for new and emergent trends to reach the group. Other than reaching the group, they must be convinced beyond a reasonable doubt that the new trends and, more specifically, those used in the management of inventory are effective.

The findings further emphasize how complex it is to combine new and old inventory management techniques to guarantee an improvement in service delivery. Regular auditing of stocks relies on the use of spot-checking, physical counting, and cycle counting that equally rely on the information captured in the online stock management database. Identifying how much stock is available relies on several actions that include spot-checking, physical counting, and cycle counting.

Dropshipping is another inventory management technique that would face much resistance if not correctly positioned to the consumer group. Therefore, inventory management is increasingly facing many changes in the advent of technological advancements, especially in developed economies where their use of technology is motivated by keeping in touch with family than researching new products or business trends.

## CONCLUSION

Inventory management is a critical practice that organizations occasionally review to ensure that it aligns with its objectives and strategies, but how often they align them to changes in technology has become a major concern. The main processes of inventory management involve ordering, storing, and management. Computerization has helped improve the management of inventory, reduction of theft, increase in profits, and improvement in meeting customer and supplier needs. Therefore, any business must realize that technology enhances the capability to manage inventory and choose to integrate them into the strategies, processes, and techniques they prefer. In fact, it is almost necessary to use it in this century.

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