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The Solution to the Inventory Overstock Problem Through a Circular Economy

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Abstract: This paper mainly uses a circular economy to solve inventory overstock problems. To begin with, the researcher discussed the background information of the overstock problem, such as how it exists and in which field it appears. Then, the researcher focuses on the fashion retailing industry to extend my research. The analysis part illustrates the problem of inventory, the system model that can be used to deal with the problem, and how to achieve such a system model. The researcher implies the potential cost of these problems to the company and how they usually are dealt with. After this, the researcher explains the circular economy at the beginning of my third part. The researcher depicts a system of inventory flow inside the company through the circular economy in detail. The researcher also offers a requirement for how to realize such a system. Finally, the researcher summarized my paper and the end of it and showed my expectations.

Keywords: circular economy, inventory, overstock

1. Introduction

1.1. Definition

To start to discuss our real problem, we have first to discuss the definition of the overstocking problem. Overstock inventory (aka "excess stock" or "surplus stock") is inventory that hasn't been sold within a realistic timeframe. In other words, they're excellent products ready to be purchased. However, there isn't enough interest in them. So, instead of bringing in revenue, they're taking up valuable space in your warehouse and eating into your profits [1].

1.2. Importance of solving the problem

Any company can encounter overstocking, which has quite a high cost. Inventory management mistakes have existed in some of the largest groups, including Target, Walmart, Nike, and H&M.. In the case of H&M, the retailer reportedly built up $4 billion worth of unsold clothing in June of 2018. Of course, the root of the problem is overambitious projections [1]. Poor inventory management and third-class product offerings constrained the company's plans to keep up with store and eCommerce expansion.

On the other hand, overstocking can severely slow down the cash flow, preventing you from purchasing things you want or making your life more difficult in the short or long run. Alternatively,

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to avoid wasting inventory, you'll have to spend more money to cover the costs of expanding storage space or chipping away the stagnant list (whether through discounts, ads, removal services, or even bundling) [1]. It may be pretty costly in value, but it is the best way to get as much money back as possible.

1.3. Comparision to former of our solution

Compared to the system model created by Atalay Atasu, Celine Dumas, and Luk N. Van Wassenhove, my model has the same number of systems as this researcher of three. The former studies how to solve the overstock problem by giving three different strategies of circularity, which are retained product ownership(RPO), product life extension(PLE), and design for recycling(DFR). In my study, the researcher takes only two circularity systems that help reduce inventory costs and increase use. This indeed develops the ability of environment conservation of the company. My study mainly focuses on how to make a company reduce the cost of production and be more environmentally friendly with the concept of circular economy, which can solve the overstock problem at the same time.

2. Literature Review

2.1. Current Situation in the Retailing Industry

The retailing industry is facing many challenges that affect it significantly. For instance, Ensuring the safety of customers and employees [2]. Because of COVID-19, customers are not interested in purchasing in retail shops but online shopping. Many retailers failed to maintain their customers after the restriction. In addition to developing safety upgrades, retail businesses are using their strength to fulfill local demand. Such guidelines include restricting the number of customers and deploying automatic sanitation systems and relevant devices. On the other hand, Supply chain disruptions are also a significant problem for retailers to survive. Right from the auto industry to OEM memory storage manufacturers, every industry struggled to access raw materials. Some of the world's biggest retailers also worked to meet the rising utility demand. Our globalized networks and supply chain exposed the delicate balance of operations. For instance, when restrictions on movement were imposed even in a remote part of the world, its presence was felt on the other side of the globe.[2] Furthermore, Skillful employees and labor shortages also annoyed the company. Despite being commented as a hero in various countries, the supply of retail workers cannot exceed global demand. The retail industry is famous for its high attrition rates, while the situation deteriorates even more during some specific cases. Low wages, limited benefits, and high-pressure jobs are the things that prevent the condition from developing into a good condition. In conclusion, the retail industry faces many difficulties that are hard to cross [2].

2.2. The impact of the overstock problem on retailers' companies

Although the retailing industry faces many problems, the researcher will still consider the inventory overstock problem the main discussion object. From a financial perspective, carrying loss increases while the potential finance loss increases. More importantly, the company may fail to maintain its cash flow in the short term and become bankrupt if its management is ineffective. In the storage field, limited storage will lead to fewer new products. Retailers cannot use popular products to replace the old ones because of overstock, which stops them from making more profits. Overstocking increases the difficulty of inventory management. Workers must take more time to ensure all the inventory is in average condition. The efficiency of the warehouse will be potentially affected in the long run. There is also obsolescence and product deterioration. The possibility of products becoming outdated

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is increasing all the time, while the value of the products will also change as the market changes [3]. There is no doubt that a company can earn nothing at all from the overstock.

2.3. Regular Strategies to handle Inventory overstock problem

Many solutions and strategies have been discovered to deal with inventory overstock problems. Companies can sell overstock products through a third-party marketplace. Selling off large quantities of excess merchandise can be a balancing act. Being strategic would be necessary, while the better idea for handling such a problem should be to cooperate with a third company, a retailer who can sell products to specific customers, to clear out the warehouse [4]. By hosting these kinds of sales off-site, the company can sell off excess inventory at scale while ensuring that customers coming to the company site don't get entrapped in the sale-only shopping cycle. Besides, running product sampling campaigns to offload freebies can also be an option. Although product sampling always runs initially, it can genuinely popularize the company's products and attract more customers. The company can quickly clear its overstocked inventory based on these two advantages.

On the other hand, this method also allows the company to gather customers' suggestions and advice on the products to make improvements. Such product sampling also effectively maintains customer loyalty, especially for large companies that rely highly on this aspect, such as Reno. Finally, the company can donate its overstock products or provide low-cost repair to its customers. The company can develop goodwill and an excellent customer impression, then increase customer loyalty and sales. Low-cost repairing seems only beneficial to customers. However, it allows the company to handle those overstock products at a cost. The company can gain more potential and loyal customers while solving the inventory problem at the same time. All of the strategies mentioned above are the regular method. They are helpful but not as effective as the solution, the circular system models the researcher will talk about.

3. Analysis

3.1. Problem statement

Before discussing the problem, we need to understand the circular economy. The circular economy tackles climate change and other global challenges, like biodiversity loss, waste, and pollution, by decoupling economic activity from the consumption of finite resources. A circular economy uses multiple uses and resource recycling to increase its resource efficiency and sustainability [5]. There are also limitations of circular economy, which should be conquered if the system wants to achieve. For instance, it requires all the employees to work effectively all the time. Since it is impossible for people in real life, the only other solution is to hire more workers. One question will always have more answers, and find it to solve the problem, back on topic. The issues in this topic are how such a circular economy cycle works in the company inventory system and how to make it practical for the large company. To solve the problems, we need first to understand how the flow pattern in the cycle runs; then, we can be clear on how to make it feasible in real life in a large company.

3.2. The flow pattern of the cycle in the inventory system

The cycle's beginning and start are undoubtedly brand, company, and enterprise. While the producer is the most crucial role for all the upcoming patterns, it is under the control of these companies and enterprises, which is the first and foremost role in the whole cycle [6]. Such companies are the primary victims and suffer from inventory overstock issue, which lasts for quite a long time [7]. Companies give order and command to their producers, which mainly consists of several large factories around the globe, to manufacture products for the coming season and trend to maximize their profits. The

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goods will be transported to the distributor, separated into two parts: the first and the second. The first fulfillment is responsible for dispensing the goods to subordinate retailers. These subordinate retailers are usually shops, whether online or offline. The dual fulfillment, however, is the one that deals with overstock products from the warehouses and redistributes them to specified retailers that only sell overstock products at lower prices. The two fulfillment above are all essential parts of the normal regulation of the cycle. Back on topic, when the first fulfillment distributes its products to its retailers, most will probably be sold out. Some of the products left behind in the warehouse take the place of the warehouse until the inventory stocking becomes a real problem for the company [8,9]. In a few decades, ruining the overstock products, a practical and easy method, became the most popular solution for inventory overstock, supported by large companies and small business traders [10]. For instance, many farmers who could not sell their milk and corn in 1929 because of economic depression poured their milk into the Mississippi River and burned it as a replacement for coal in the train engine [11]. Even though the way of purchase has developed considerably nowadays, farmers still decided to pour out the milk and ruin their corn during the COVID-19 period. On the other hand, these ruined products still have their value before they are destroyed, and it is pretty convincing that they will make large amounts of profits if the second fulfillment can redistribute them. In our cycle, these overstock products will be transported to the first fulfillment, where they will be redistributed when sold out. Since the company uses the exceed products to meet the lack, this requires the company to produce fewer products to fulfill customers' demand. Furthermore, if the outcomes cannot be sold out, they will enter the second fulfillment and be distributed to addressed retailers. Because these specific overstock products retailers are usually lower in price and poor in fulfilling people's various demands, they can hardly threaten the regular large market of the products.[12] Compared with zero profit, which is brought by ruining the products, reselling these overstock products at relatively lower prices is profitable for the company. The products that are both being left in the warehouse during two fulfillments, as a result, will be sent to the third fulfillment. Some products may be sold out successfully during this final fulfillment, while others may not. Those products that cannot be sold will be decomposed into materials, like iron and cloth. This is quite an innovative and beneficial result for the company and ordinary citizens. Not only because the company can truly get rid of those unsuccessful products and make room for new ones but also because this avoids polluting the environment and helps conserve the environment since it is recycling the waste [13]. At this moment, the recycled raw material can be sent back to the factory of producers, which can save a large amount of cost in the long run. In such a cycle, it is beneficial for the company since it can save costs and become environmentally friendly at the same time.

3.3. Way to make the cycle practical for a company

There is no doubt that the cycle mentioned above is quite attractive and beneficial, but it is pretty difficult to realize it. To achieve such a complex but effective system, companies must first build up an online system capable of sharing basic inventory information, such as the quantity of the products and when or where the new batch will come up. More importantly, this system must require the ability to monitor the demand of local customers toward the products through how many of the products are sold out. Finally, the system will surely need to analyze the priority of inventory in different regions by analyzing the statistics it monitors. This appears when the system can allocate how many and where the supply of the products in the next batch will go, significantly when it can assign overstock products to the place that has already sold out all their inventory in their warehouses. Employees should also be able to use such a system to share information about the list, which protects the inventory information from spilling. Despite the system perspective, managers and employees with good skills are also highly needed [14]. Managers should be skillful at managing several people simultaneously with a clear and direct order, while the employees should be familiar with their job

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content and effectiveness. Managers have to take more stress in such a circular cycle because more fulfillment centers need many employees to operate. When managers are not capable of paying attention to everyone, the subordinates ought to attain the conscientiousness to work and be well-motivated. Therefore, managers also desire motivation skills unless the company is willing to flatten its management structure. Besides, employees should be familiar with online systems, whether regular workers or managers. A separate supervise department may be needed to monitor all the workers and guarantee they will do their job on time with good quality. Employees should be able to speak the language they are working in for effective communication, especially for MNCs.

Nevertheless, many employees are undoubtedly needed to maintain the whole system work. At last, the transport part. Inventory mobility is relatively high in this system to sell the products better. The country can use trains as its primary transportation inland during ships and airplanes from those trips across the ocean. Of course, transportation should relate to an online management system to track where the inventory goes. Even though it is not practical for a company to buy an airline or railway company, cooperating with a transportation company will undoubtedly be a favorable option. Based on such a process, it should be easy for a large company to build up and create a circular system inside the company.

3.4. Benefits of the system

The definition of circular economy is tackling climate change and other challenges like biodiversity loss, waste, and pollution by decoupling economic activity from the consumption of finite resources. In our system, the company reduces their cost of raw materials and potential corruption. The limited resources and products are decoupled several times and finally recycled. Even though companies have to spend more time and resources to develop an ideal system like this, they do realize it and optimize their inner retailing pattern, which leads to the company's continuous development and conservation of the environment through a system similar to Kaizen in the end.

4. Conclusion

4.1. Summarize

The problems in this topic are how such a circular economy cycle works in the company inventory system and how to make it practical for the large company. To solve the problems, the analysis provides a brief logic chain of the system and its flow pattern. The cycle's beginning and start are undoubtedly brands, companies, and enterprises. Companies give orders and command their producers to manufacture products for the coming season and trend to maximize their profits [15]. The goods will be transported to the distributor, separated into two parts: the first and the second. When the first fulfillment distributes its products to its retailers, the overstock products will be returned to the first fulfillment center and redistributed. If the products cannot be sold out, they will enter the second fulfillment and be distributed to addressed retailers. After these two fulfillments, these products will be transported to a third fulfillment and finally be decomposed into raw materials if they remain in the warehouse. The raw materials will be returned to the factory in the production stage to reduce the cost of materials and pollution.

To achieve such a system, the company has to build up an online system capable of sharing the basic inventory information and analyzing the customers' demand in the local area for better allocation of inventory [16]. Managers and employees with good skills are also highly needed. Transportation of the stock should relate to an online management system to track where the list goes [17].

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4.2. Addressing the purpose

My purpose for the topic is to help the company solve the inventory overstock problem and be more environmentally friendly through a better regulation system around such inventory. The researcher highly recommends the company, whether large or small, new or old, try such an ideal system and then discover its unique benefits on profits and fame [18]. Such gains should be attractive to the company. Of course, some limitations exist, such as requiring workers who can consistently complete their mission on time [19]. Developing such a system also requires the company to spend lots of money. However, future research could take in from these perspectives and go on research to make such a system model come true.

4.3. Final thoughts

For these research and analyses, there is no doubt that such a circular economy regulation system can genuinely improve the performance of inventory regulation in a company, especially for those in the fashion industry. Not only because such a system can benefit the environment for less cost but also because it can help the company better allocate its resources.

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