

# Literature Survey

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Team ID	PNT2022TMID26994
Project Name	Project – Inventory Management System for Retailers
Maximum Marks	4 Marks

**Paper-1:** Soonkyolee, youngjoo kim, taesucheong, seung ho yoo. Effects of yield and lead-time uncertainty on retailer-managed and vendor-managed inventory management. Current version December 19, 2019.

This paper aims to model the possible relationship (decentralized and centralized ) between retailer and salvage retailer. Zero ending inventory is also boost the sale and profit based on the demand formulation. Using numerical experiments, a comparative analysis of the two alternatives is conducted to determine suitable options for improving supply chain performance. In general, the performance of vendor-managed inventory is better than that of retailer-managed inventory, but we observe from the numerical experiments that there exist circumstances under which retailer-managed inventory shows better supply chain performance. Semiconductors are the core components of a variety of electronic devices, such as smartphones and tablet PCs. Due to the recent high demand for mobile devices, the demand for semiconductors has also risen. In addition, as more firms require electronic devices to store and collect big data for analysis purposes, the demand for semiconductors has reached record highs over the past few years. we examine models that analyze the impact of supply uncertainty in retailer-managed and vendor-managed decentralized supply chains on supply chain performance The centralized production quantity is always greater than the production quantity of the VMI, which is quite intuitive. Under the same conditions, it would be more advantageous for the manufacturer under the VMI model to set the wholesale price higher; however, because the retailer's profit decreases rapidly as the wholesale price increases One of the limitations of this study is that we do not propose appropriate contracts that coordinate a decentralized supply chain under either the RMI or VMI model when both yield and lead-time uncertainty exists Another limitation is that we assume that the retailer knows the manufacturer's yield and lead-time information. Thus, our study can be extended to a decentralized supply chain where this information is not fully available to the retailer. In addition, we consider a supply chain consisting of a single manufacturer and a single retailer. Thus, our study can be extended to more complex supply chains (e.g., multiple retailers or three-echelon supply chains including a distributor) and evaluate the impact of simultaneous yield and lead-time uncertainty.

Paper-2: Cinthya Vanessa Munoz Macas, Jorge Andrés Espinoza Aguirre ,Rodrigo Arcentales-Carrion, Mario Pena. Inventory management for retail companies: A literature review and current trends. Sep 13,2021.

A systematic literature review was carried out to determine the main trends and indicators of inventory management in Small and Medium-sized Enterprises (SMEs). This research covers five years, between 2015 and 2019, focusing specifically on the retail sector. Findings indicate that SMEs do not invest resources in sophisticated systems; instead, a simple Enterprise Resource Planning (ERP) system or even programs such as Excel or manual inventories are mainly used. Nowadays, organizations, and especially those performing activities in the retail sector, face multiple challenges in the planning and management of their resources. For this sector, having efficient management of human, technological, or material resources refers to the performance that companies characterized by the experience gained in their management could obtain over time. The determination of the optimal inventory level is a fundamental part of the life of organizations due to the high investment that it represents at the time of its acquisition, administration, and maintenance. “the role of inventory management is to ensure that stocks of raw material or other supplies, i.e., work-in-progress and finished goods, are kept at levels that provide maximum service levels at minimum costs”. This article aims to present an extensive literature review concerning inventory control and management in the retail sector. First, the paper includes a systematic literature review regarding the Key Performance Indicators (KPIs) of inventory control and management in retail companies. Second, the main systems, methodologies, and tools used for inventory management are described. Finally, a qualitative and quantitative analysis was performed to answer the research questions raised. The organization of the paper is as follows. The methodology through which the work was guided. The next section encompasses results together with analysis and discussion. Ultimately, Section shows the conclusion section gathering the main findings as well as proposals for future work. Retail companies have acquired significant importance within several countries due to their high economic contribution. Therefore, the need to analyze their KPIs becomes highly significant, as well as their different systems, methodologies, and tools used within inventory management and optimization. The importance of evaluating an inventory management system using indicators is reflected in the main advantages, i.e., the decrease in monetary loss, higher operating performance, and a higher profit rate. Overall, the evidence from this study suggests that order quantity, inventory localization, and optimization are the main factors in which the systems, methodologies, and tools are focused. It is important to mention that all retailers may not be able to employ these technologies due to their high cost of implementation and maintenance. To all those retailers with limited resources, cheaper software is accessible that could help with the management of their inventory like bar codes or policies as EOQ, AUD, and IQD, which will allow optimizing their stock without making considerable investments.

**Paper-3 :** Kamilah ahmad, shafie Mohamad zabri. Inventory management practices among Malaysian micro retailing enterprises. October 2016.

The current state of inventory management practices and factors that influence their use in micro retailing enterprises. A questionnaire survey was employed to gather data from the target respondents. A fully systematic approach of inventory management was only utilized by 33 per cent of the total respondents. In terms of inventory management techniques used, 'the rule of thumb' is the most popular among respondents. Meanwhile, EOQ, Bar Code Tagging and VMI are only applied by a small number of respondents. The results also indicate that Purchasing and Controlling are the most frequent inventory management activities applied by micro enterprises as opposed to Storage and Tracing. Finally, the results suggest that owner/managers' attitude and knowledge in inventory management have significant and positive influences on inventory management practices. Inventory management is one of the most important components in operation management (Capkun et al., 2009), as this area has been a central management function in material management systems (Mohanty, 1985; Rajeev, 2008; and Ahmad et al., 2014). It is also a crucial aspect of management, since inventory is one of the significant financial assets of a business that can indirectly affect profitability. Dobler (2006) claimed that firms with good inventory management can increase the firms' overall profit that will result in an increased level of working capital, production and customer satisfaction (Rajeev, 2008). The roles and functions of inventory management should be clearly assessed through linking the firm's goal to the requirement of the inventory. In most countries, the retailing industry consists of a significant number of businesses, especially in the small and medium-sized enterprises (SMEs) sector. For example, in Malaysia, almost half of the SMEs come from wholesale and retail industries. Out of this portion, 80 per cent of the establishments fall into the category of micro enterprises. Malaysian micro enterprise is defined as businesses that fall within the criteria of having either an annual sales turnover of less than RM 300,000 (equivalent to approximately USD 75,000) or fewer than five employees. Therefore, this paper has begun to bridge this gap by investigating the current practice of inventory management in the Malaysian micro retailing enterprises and factors that influence inventory management practice. Consequently this paper enriches the body of knowledge in inventory management in small businesses. The literature above suggested that inventory should be properly and systematically managed in order to avoid loss to the company, as it associates with the performance. Organizational issues and an unwillingness to share information within the retailing enterprises appeared to be significant challenges to further improve the inventory management practices within small businesses. The literature also proposed that the culture of lack of precision of inventory information, especially due to the lack of sophisticated system or technology, might affect the efficiency of inventory management. In term of the general practices of inventory management, most respondents have adopted both the unsystematic and systematic inventory management approaches in their business. This study is limited to the small businesses in the retailing industry; therefore, the findings of this study are not generalized to other sectors or industries. Future studies should increase the number of sample in order to collect more reliable evidences in this area or add more contextual variables such as the effect of technologies, business strategies and culture on the application of inventory management practices within small businesses.

Paper-4 : Prayoga dharma, shi-woei lin .Retailer and Salvage Retailer Relationship when Demand Depends on Product Price, Freshness, and Displayed Inventory Level February -17, 2017.

The aim of inventory management is to maintain and keep an optimum size of inventory for efficient and smooth production and sales operation. There are improve sales forecasting Zero ending inventory assumption inventory is also relaxed to boost the sale and profit based on the demand formulation. As a result, the objective is to determine three decision variables (i.e., product price, inventory cycle time, and ending inventory level) in order to maximize the total profit. Nowadays, there is a unique phenomenon in the retailing grocery products (e.g. instant noodles, biscuits, and milk). There is a retailer that sells nearly expired grocery products (salvage retailer). Although the price is a well-known factor that affects the demand for a product, the demand for the product is also affected by other factors, such as the product freshness (product age) and displayed inventory level. In general, the freshness level of the product is likely to negatively affect the demand for perishable goods Since the higher level of inventory is followed by the higher level of demand, it is clear that keeping high the displayed stocks level may result in boosting sales and profit on this area was done by Feng, Chan and Cardenas Barron [4]. They built retailer inventory model with demand depending on price, product freshness, and displayed inventory level herefore, the objectives of this study are to model and compare the results of retailer and salvage retailer inventory problems with demand depending on product price, displayed inventory level, and product freshness under decentralized and centralized systems. The novelties of this paper are to propose another freshness polynomial function and to consider retailer and salvage retailer in one-time frame. Moreover, in order to boost the total profit, this paper is also relaxing zero ending inventory assumption to non-zero ending inventory. Based on the calculation, the following instances are captured: (1) Centralized system is harder to be applied, but is quite easier for a big retail company, (2) Prolonging product's maximum lifetime and increasing shelf space can increase retailer and salvage retailer profit, (3) Pricing strategy has important role in increasing sales and profit. This paper can be extended by relaxing the demand function from deterministic to stochastic and by adding profit sharing method between retailer and salvage retailer to exploit potential profit that can be generated by both sides.