

INVENTORY MANAGEMENT FOR RETAIL

HARIVARTHINI R, GRACIA BETTY J, DEEPTHI OP, AISHWARYA R

LITERATURE SURVEY

S.no	TITLE	AUTHOR	ABSTRACT	MERITS	DEMERITS
1	Inventory management for retail companies: A literature review and current trends	Cinthya Vanessa Muñoz Macas, Jorge Andrés Espinoza Aguirre, Mario Peña	<p>In recent years, the correct management of inventories has become a fundamental pillar for achieving success in enterprises. Unfortunately, studies suggesting the investment and adoption of advanced inventory management and control systems are not easy to find. In this context, this article aims to analyze and present an extensive literature concerning inventory management, containing multiple definitions and fundamental concepts for the retail sector. 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. The primary outcomes of this study are the leading inventory management systems and models, the Key Performance Indicators (KPIs) for their correct management, and the benefits and challenges for choosing or adopting an efficient inventory control and management system.</p> <p>Findings</p>	<p>1)All the KPIs identified allow knowing the effectiveness of inventory control and management carried out within retail companies.</p> <p>2)The product availability is related to the inventory information provided to the customer, through which the customer verifies the service quality.</p> <p>3)Price calculations can be presented in real-time.</p> <p>4)RFID stock counts allow inventory levels to be evaluated every day considering each stock line in every area of the store.</p> <p>5)This item-level tagging tool is able to reduce the technology breach and give the retailers both the accuracy and the ease of use which are needed in order to help their merchandising plan and store display performance.</p> <p>6)field of vision is not needed for the item registration, various products are able to be registered with a single can, also tickets can be read from quite a great range.</p> <p>7)In the retail store,there are four main ideas on which the procedures are</p>	<p>1)A retail store must have the same data in all its records, that is, the data that has been recorded in the information system must be the same data that is physically held.This is necessary due to continuous inconsistencies that exist between the physical inventory record and the inventory that appears in the system, incurring operational consequences.</p> <p>2)Among the strategies used by retailers to minimize the effect on operational activities caused by inventory, several different errors can be detected, such as storing additional items or increasing the frequency of restocking of stores with the purpose of maintaining a high level of inventory.</p> <p>3)A lack of products can be caused by various factors, including differences between product costs, which creates the possibility of a shortage of an expensive product and an excess of cheap products.</p>

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			<p>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.</p>	<p>based on: improving stock exactness, out of stock management, products localization, and loss recognition.</p>	<p>4)Retailers suffer from product misplacement problems. 5)One of the causes of inventory inaccuracy is making incorrect deliveries, driving an increase in the return of products . 6)Inventory problems imply low adaptability and a lack of functionality in the retailer's SC. 7)inaccuracy in the inventory record affects the operational performance of a retailer. 8)Poor service level results from having inadequate inventory control parameters.</p>
2	<p>Towards Intelligent Retail: Automated On-Shelf Availability Estimation Using a Depth Camera</p>	Annalisa Milella	<p>Efficient management of on-shelf availability and inventory is a key issue to achieve customer satisfaction and reduce the risk of profit loss for both retailers and manufacturers. Conventional store audits based on physical inspection of shelves are labor-intensive and do not provide reliable assessment. This paper describes a novel framework for automated shelf monitoring, using a consumer-grade depth sensor. The aim is to develop a low-cost embedded system for early detection of out-of-stock situations with particular regard</p>	<p>1)In the last decade, advanced sensor-based technologies mainly using Auto-ID systems, weight sensors and imaging devices have been proposed for automatic stock monitoring and inventory. 2) a novel framework for online shelf monitoring using a depth sensor is proposed. It can generate a 3D point cloud of the shelf and products therein. 3)In order to cope with the high variability of store environments, the use of machine learning</p>	<p>1)If OOS conditions occur repeatedly, customer satisfaction is reduced with potentially negative effects for both retailers and manufacturers. 2)weight sensors entail high installation costs. 3)sensors can only determine the number of products stacked on the shelf without accounting for possible product misplacements, as they do not allow for product identification and tracking</p>

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			to perishable goods stored in countertop shelves, refrigerated counters, baskets or crates. The proposed solution exploits 3D point cloud reconstruction and modelling techniques, including surface fitting and occupancy grids, to estimate product availability, based on the comparison between a reference model of the shelf and its current status. No a priori knowledge about the product type is required, while the shelf reference model is automatically learnt based on an initial training stage. The output of the system can be used to generate alerts for store managers, as well as to continuously update product availability estimates for automated stock ordering and replenishment and for e-commerce apps. Experimental tests performed in a real retail environment show that the proposed system is able to estimate the on-shelf availability percentage of different fresh products with a maximum average discrepancy with respect to the actual one of about 5.0%.	techniques has been proposed, to ensure higher robustness and accuracy,	
3	Inventory Management Optimization Model with	Yusuf Sutanto, Riyanarto Sarno	Although the physical internet inventory control	1)WMS improves inventory control by minimizing the manual	1)Based on the qualitative data collected, key drivers leading to

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	Database Synchronization through Internet Network (A Simulation Study)		model better than the classical model, but the model of inventory management with database synchronization better than the physical Internet. With the approach database synchronization, several hubs can be combined into one hubs, and the plant can also sending goods directly to the retailer. In addition to optimizing transport and inventory, this analysis allows to choose a dynamic source when an order is placed: source substitution. Although this calculation is working on a computer simulation, the main intent of this paper is to define new research model inventory controlling better than classical inventory model and physical internet inventory model, which is inventory management model in synchronized database.	operation because it is associated with auto-ID data capture technology. 2) To obtain a high level of supply chain visibility, responsiveness, and flexibility, IoT is the best technology available. 3) IoT technology allows the reduction in the lead-time between data captured and real-time decision-making, enabling the supply chain to react to any dynamic changes on a real-time basis. 4) IoT enables remote management of operations, better collaboration with partners, and provides accurate information for more effective decision-making.	the poor performance of the reverse logistics operations gaps were identified. 2) Poor traceability among returns. 3) No visibility and No integration the existing WMS. 4) Loading Error and Handling issues. 5) Delayed Pick up and Counting errors
4	Case Study on an Android App for Inventory Management System with Sales Prediction for Local Shopkeepers in India	Tejal Tandel, Sayali Wagal, Nisha Singh, Rujata Chaudhari, Vishal Badgujar	a mobile application that provides all the features of a point-of-sale system as well as gives future sales insights. It will enable shopkeepers to manage their current product purchases and invoicing. The predictive sales analysis will help them to modify their investments on products and supplies thereby ensuring maximum profits. If a shop houses relevant products that cater to	1) good percentage of people in India have access to smartphones and that percentage will greatly increase in the coming 2-3 years. With such favorable circumstances, an Android app is ought to flourish and attract a wider customer base over a period of time. Thus it is advantageous to have a mobile application	1) The technique used in this paper for data mining and prediction reports is fuzzy logic. 2) Fuzzy logic is used when the outcome is uncertain.

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			customer needs, its customer reach will increase. The Economic Times published an article in the May of 2019, which stated that the number of smartphone users in India is expected to rise by 84% to 859 million by 2022 from 468 million in 2017. It is safe to assume that a large population of shop owners will have smartphones in the following years. Hence, equipping the local shopkeepers with a mobile application will prove instrumental since it will give them exposure to all the aforementioned benefits.	2)customers will avail of the experience of accessing the right products at the right time and will stay informed about new product 3)the app will not only assist in bringing about social empowerment and development but will also present profitable business opportunities to app development companies. 4)the future scopes of this app is that the processing can be taken over the cloud so that the app consumes less memory space but functions speedily and efficiently.	
5	Streamlining Reverse Logistics through IoT driven Warehouse Management System	The process of managing the return of goods (Reverse logistics) is critical for the company, yet the most undermanaged business function. From the operational process, prospective warehouse management and 3PL (third party logistics party) play a crucial role in managing RL (Reverse Logistics) process. In the entire process, the WMS	Leena Wanganoo	1)Omni-channel can be effective and responsive to customer needs because it exploits the strengths of both online and onsite retail channels of the supply chain 2)Omni-channel retailing refers to the use of a variety of distribution channels to fulfill the customers' orders.	1)The process of return is complex and there are challenges faced by all the key players in the process 2)The process of reverse logistics managed manually managed on legacy systems. Retailer pays least attention to post-purchase activities like reverse logistics management. Poor 3)Management of reverse logistics leads –loss in revenue and customer dissatisfaction.

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		<p>(Warehouse management system) is the core system managing the storage of incoming goods, and the system itself should be interface and collaborate. However, practically, the return management process lacks system integration with the collaborative partners leading to delay, high inventory, and low customer satisfaction. The research aims to analyze the current challenges in the reverse logistics (RL) management and suggest a conceptual framework to integrate the WMS by adopting technologies like - IoT and RFID to provide seamless visibility, monitoring, and control across the supply chain.</p>			
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