

Inventory Management and Digitalization in Commercial Microenterprises

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Gestión de Inventarios y Digitalización en Microempresas Comerciales

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ABSTRACT

Introduction: inadequate inventory management in commercial microenterprises at the global, regional, and local levels is a significant cause of economic losses, lack of liquidity, and business mortality, negatively affecting profitability and customer service.

Objective: to characterize the importance of inventory management, the application of the ABC method, and the impact of digitalization.

Method: a review of the available literature was conducted in databases such as SciELO, Scopus, and ClinicalKey, from which a total of 16 related articles were consulted. Empirical methods such as logical history and analysis and synthesis were used.

Results: inventory management goes beyond mere physical counting. Effective management of products and sales is crucial to business success. Inventory management is affected by several variables, including demand, costs, service level, and lead times. The choice of the appropriate software should be based on scalability, initial cost, required functionality, and return on investment. Proper inventory management is vitally important for businesses, as its proper management and implementation help maximize sales, free up capital for investment in other areas, generate warehouse space, and minimize or eliminate losses.

Conclusion: inventory management is a determining factor in the profitability and sustainability of microenterprises. Digitization offers a return on investment by reducing errors, improving operational efficiency, and professionalizing stock control.

Keywords: Control; Digitization; Management; Inventory; Optimization; Profitability.

RESUMEN

Introducción: la gestión inadecuada del inventario en microempresas comerciales a nivel global, regional y local es una causa significativa de pérdidas económicas, falta de liquidez y mortalidad empresarial, afectando negativamente la rentabilidad y el servicio al cliente.

Objetivo: caracterizar la importancia de la gestión de inventarios, la aplicación del método ABC y el impacto de la digitalización.

Método: se realizó una revisión de la bibliografía disponible en bases de datos como SciELO, Scopus y ClinicalKey de las cuales se consultaron un total de 16 artículos relacionados, se utilizaron métodos empíricos como el histórico lógico y de análisis y síntesis.

Resultados: la gestión de inventarios trasciende el mero conteo físico. La gestión efectiva de productos y ventas es crucial para el éxito empresarial. La gestión del inventario se ve afectada por diversas variables, entre ellas la demanda, los costos, el nivel de servicio y los plazos. La elección del software adecuado debe basarse en la escalabilidad, el costo inicial, las funcionalidades requeridas y el retorno de la inversión. Realizar una buena gestión del sistema de inventarios es de vital importancia para las empresas o negocios, ya que su manejo y aplicación adecuados permiten maximizar las ventas, liberar capital para invertir en otras áreas, generar espacio en el almacén y minimizar o eliminar la pérdida.

Conclusión: la gestión de inventarios es un factor determinante de la rentabilidad y sostenibilidad de las microempresas. La digitalización ofrece un retorno de la inversión al reducir los errores, mejorar la eficiencia operativa, y profesionalizar el control de stock.

Palabras Clave: Control; Digitalización; Gestión; Inventario; Optimización; Rentabilidad.

INTRODUCTION

In any company, an inventory control system is essential because it manages key elements for production, purchasing, and sales. Globally, inventory management is becoming increasingly critical due to globalization and changing marketing strategies, as companies face challenges with storage and distribution.⁽¹⁾

Inventory management is an indispensable strategic pillar for the operation and survival of any company, regardless of its size, as it manages the most essential assets related to production, purchasing, and sales. In today's global context, characterized by globalization and volatility in marketing strategies, the challenge intensifies, forcing companies to optimize their storage and distribution processes.⁽²⁾

At the Latin American level, the problem is critical. In countries such as Peru, it has been revealed that a high proportion of companies (up to 83 %) face significant difficulties in controlling their stock. These problems translate directly into significant economic losses, impacting profitability, service quality, and customer loyalty. The lack of adequate controls has been linked to a high business mortality rate, with most small and medium-sized enterprises in some countries failing to survive beyond five years in the market.⁽³⁾

In Ecuador, the situation is no different. Poor inventory management has been a determining factor in the loss of growth opportunities, liquidity control, and competitiveness for several companies in the commercial sector, leading, in many cases, to decreased profitability and business closures. For Ecuadorian small and medium-sized enterprises (SMEs) and microenterprises, the evaluation and internal control of their assets are essential to improve performance and ensure profitability. Specifically, in the city of Guayaquil, significant challenges have been documented, including discrepancies between physical inventory and system records, which have generated additional costs and hindered resource control.⁽⁴⁾

At the Ecuadorian level, inventories are fundamental to a business. Due to poor inventory management, several Ecuadorian companies in the commercial sector have lost opportunities for growth, profit generation, and liquidity management, leading them to face financial, operational, and competitiveness problems. In most cases, this has led to decreased profitability and forced them to exit the market.⁽⁵⁾

Companies need to maintain adequate control over their inventories because they are an essential part of the business and can improve profitability. In Ecuador, SMEs that sell products or services often neglect inventory management, so it is essential to evaluate and control their assets to improve operations.⁽²⁾

Inventory management in microenterprises is considered crucial to improving their performance and profitability. Proper inventory control allows resources to be used efficiently, avoiding excess or shortages of products, thereby reducing costs. In addition, it improves responsiveness to demand changes, strengthening competitiveness. By maintaining an adequate inventory balance, profits are maximized and long-term business stability is ensured. In short, efficient inventory management is essential for the success of microenterprises.

The microenterprise Comercial Bonito, located in the parish of Tenguel, Guayas, is a clear example of this problem. The absence of an inventory management system has had direct, detrimental consequences, including damage and theft of merchandise, reduced liquidity from excessive purchases, and customer losses due to shortages of key items. These operational

failures have undermined profitability and jeopardized the long-term sustainability of the business, highlighting the imperative need to implement an efficient and digitized system.⁽⁶⁾

In view of the above, the objective of this review article is to characterize the importance of inventory management, the application of the ABC method, and the impact of digitization.

METHOD

An integrative literature review was conducted, combining a synthesis of theoretical and regulatory literature. For the theoretical and regulatory basis, academic databases such as Scopus, Google Scholar, and Dialnet were consulted. Priority was given to articles published in indexed journals, specialized books, and official documents from regulatory bodies. The synthesis was carried out in a narrative form, critically contrasting the case study's findings with the theoretical-regulatory framework established in the literature, identifying consensus, discrepancies, and gaps in application. The terms "Control," "Digitization," "Management," "Inventory," "Profitability," and "Optimization" were used as keywords in the article. A total of 16 references addressing different characteristics related to the topic in question were selected.

RESULTS

Inventory is the stock of merchandise your business must maintain in its stores today and in the future, allowing you to track your merchandise, know when to place orders, and understand what and how much to order. Inventory is a current asset for companies, as it represents the finished products, raw materials, and other materials that the company maintains for use in production and sales. Proper management is essential to maintaining an adequate balance between supply and demand, minimizing storage and obsolescence costs, and maximizing the company's profitability.⁽⁷⁾

Inventory management goes beyond mere physical counting; it is a critical tool that directly affects the company's financial performance. Proper stock management is essential because inventory represents an asset that, if valued correctly, helps avoid underestimating or overestimating profits.⁽⁸⁾

Companies in Peru face significant problems in controlling their inventories. These problems cause substantial economic losses, affecting profitability, customer satisfaction, and the quality of the products or services offered. In the United States and Mexico, the lack of adequate controls over inventory and warehouse physical balances affected many entrepreneurs, according to data from the National Institute of Statistics and Geography (INEGI). This inadequate management, especially in the automotive industry, led to debt and tampering.⁽⁹⁾

Effective product and sales management is crucial to business success, as prosperity depends on these activities. Since each company is unique, they use different systems and methods to manage their inventories efficiently. Depending on how often they are carried out, two types of systems are identified: perpetual and periodic. The perpetual system, also known as a permanent or constant system, involves continuous counting of products during the company's daily operations, providing constant updates without interruption. In the periodic system, products are recorded regularly, usually at the end of the year, though this can be done more frequently depending on the company's needs.⁽¹⁰⁾

Inventory management is affected by various variables,

including demand, costs, service levels, and lead times. Demand varies with sales forecasts, while costs relate to maintaining products in stock and recording them in the accounts. The service level seeks to satisfy customers by maintaining sufficient inventory; if you run out of stock and cannot offer what customers need, they may turn to the competition. Lead times refer to the time required to receive and make products available.⁽¹¹⁾

Inventory optimization consists of finding the right balance between maintaining sufficient stock to meet customer demand and avoiding excess that could lead to additional storage and obsolescence costs. Some strategies to improve these success factors include implementing inventory management systems based on anticipated demand and replenishment times, using forecasting techniques to predict future inventory needs more accurately, and creating policies that determine optimal inventory levels for each product, taking into account demand, delivery times, and storage costs.⁽⁷⁾

The literature confirms that robust inventory control is essential to maintaining the flow of goods and the efficiency of procurement systems, thereby improving the effectiveness of the sales process. The cost of keeping a unit in inventory for a year can be significant, reaching 20 % of its value in some contexts, so inventory optimization must seek a precise balance.⁽¹²⁾

Technological advances bring significant changes that benefit companies, enabling them to gain a competitive advantage in the market. For this reason, information technology (IT) is considered a set of systems, applications, techniques, tools, or methodologies that transmit digitized information in real time, optimizing processes and supporting strategic decisions. Therefore, IT is considered an indispensable tool for improving organizations' productivity by introducing technologies that generate positive effects and enable greater efficiency when applied correctly and intelligently.⁽¹³⁾

Among the methods used for inventory organization and control, methods that contribute to minimizing investment in the cost of storing inventory should be taken into account, as they ensure that inventory control methods or models allow organizations to plan, organize, direct, control, and evaluate their activities to obtain quality, efficient, and effective goods and services. Thus enabling the organization to meet its customers' needs. Among the various methods are the following: the ABC method and the EOQ method (economic order quantity).⁽¹³⁾

The efficiency of inventory management is evident in the case studies analyzed, as it is considered an ongoing challenge, since it depends on the context and need for efficiency: that is, there are warnings about excess inventory stored in different countries, mainly in goods for sale, raw materials and supplies, as well as parts and spare parts, finished and in-process production. The second challenge is planning and control: the need to give priority to these inventories to achieve the objectives of the Economic Plan and create conditions for future economic performance.⁽¹⁴⁾

In the city of Guayaquil, transportation companies faced a significant challenge in efficiently managing spare parts inventories, which were crucial to maintaining the operability of their fleets. Discrepancies were detected between physical stock in the warehouse and system records, making it challenging to control resources and accurately account for costs properly. In addition, it was necessary to analyze and clearly define the documented functions and procedures for inventory management within these organizations to optimize operations and avoid

operational problems.⁽⁴⁾

Research on Ecuador's flower sector has shown that suboptimal inventory management models have an impact of 26 % to 75 % on companies' profitability, leading to stock shortages and expired supplies. Lack of control in microenterprises can lead to products leaving the premises without being accounted for, which undermines their growth and liquidity.⁽¹⁵⁾

Poor management manifests itself in losses from theft, damage, and shortages, as well as reduced liquidity from excessive purchases. These findings show that liquidity and debt levels are intrinsically linked to efficient inventory management, which are determining factors in the profitability and sustainability of micro-enterprises.⁽⁶⁾

To optimize inventory, companies must apply control methods that enable them to allocate management resources strategically and differentially. ABC analysis, based on the Pareto principle (the 80/20 rule), is one of the most widely used and effective methods for classifying and prioritizing products.⁽⁹⁾

ABC Analysis divides inventory into three main categories according to their annual consumption value or contribution to profitability: Group A (High Value) items represent the highest consumption value but the smallest quantity. These should be the highest priority, with rigorous controls, frequent cyclical inventories, and detailed demand forecasts. Group B (Medium Value) includes items of intermediate value and quantity, with less intensive monitoring than Category A but more rigorous than Category C. Finally, Group C (Low Value) constitutes the most significant part of the inventory in terms of quantity but has the lowest consumption value. The management of these items should be simplified, focusing on volume purchasing to reduce costs and maintaining more flexibility.⁽¹⁴⁾

The correct application of ABC Analysis has a positive impact on operational efficiency. It allows you to focus on the most critical items, reduces inventory costs, and facilitates a more focused and accurate demand forecast. In one study, the implementation of ABC had a positive impact on the average reduction of excess inventory (39 % less) and shortages (10 % less).⁽¹⁵⁾

The implementation of digital systems is the technological response to the challenges of digital transformation, especially in small organizations such as SMEs. Digitization is a key success factor that ensures sensible resource allocation and more efficient processes.⁽¹⁶⁾

Although micro-enterprises in the commercial sector can manage most of their processes effectively, digitization is the most common and critical deficiency. Reliance on manual processes is prone to errors and record inconsistencies, hindering traceability and informed decision-making. A digital inventory management system provides real-time information, which is vital for effective decision-making, saving time and reducing costs. The software facilitates the automation of processes such as physical and virtual inventory tracking, purchase order creation, reorder point and safety stock setting, and integration with the Point of Sale (POS).⁽¹²⁾

The choice of the right software should be based on scalability, initial cost, required functionalities, and return on investment (ROI). The literature identifies several systems relevant to SMEs, such as Zoho Inventory, Odoo Inventory, and QuickBooks Commerce (TradeGecko). The software offers significant benefits that justified its investment in Comercial Bonito. VisualFac's implementation proposal aimed to reduce

errors, improve overall efficiency, train staff in the use of technological tools, and optimize inventory control, thereby eliminating dependence on manual records. This comprehensive approach is crucial, as investment in software must be accompanied by investment in human capital.⁽⁶⁾

Good inventory system management is vitally important for companies and businesses, as proper handling and application allow them to maximize sales, free up capital to invest in other areas, generate warehouse space, and minimize or eliminate product loss, poor circulation, over-ordering, and stock shortages. It also optimizes customer service and sales dispatch times. All these benefits provided satisfaction for both owners and employees, creating an atmosphere of security. Implementing and maintaining the management system provides an opportunity to delegate the function to a trusted employee and allows managers or owners to organize and manage the microenterprise more efficiently.

CONCLUSIONS

Inventory management is a determining factor in the profitability and sustainability of Ecuadorian commercial microenterprises. The lack of digitization leads to losses due to theft, stockouts, and excess inventory. The ABC Classification method has established itself as an indispensable methodological tool for inventory management in microenterprises. The implementation of an inventory management system is fully justified despite its initial cost. Digitization offers a return on investment by reducing errors, improving operational efficiency, and professionalizing stock control, which is crucial for the sustained growth of SMEs.

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CONFLICT OF INTEREST

The authors declare that there is no conflict of interest.

AUTHOR CONTRIBUTION

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