

ESTRATEGIAS DE MONITOREO Y CONTROL INTERNO PARA INVENTARIOS DE REPUESTOS EN EL CONCESIONARIO

MONITORING AND INTERNAL CONTROL STRATEGIES FOR SPARE PARTS INVENTORY AT ANTONIO LARREA DEALERSHIP

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RESUMEN

El presente artículo científico aborda sobre la importancia de la evaluación de un sistema de control interno en el concesionario Automotores Antonio Larrea para mejorar la gestión de inventarios de repuestos. El objetivo principal es analizar la revisión de los mismos mediante la recolección de datos, con el fin de optimizar la eficiencia en la gestión de inventarios. Para alcanzar este objetivo, se han definido tres objetivos específicos los cuales son: la identificación de deficiencias en los procesos de adquisición y reposición de repuestos utilizando encuestas, también se aplicará el método COSO para evaluar el control interno, y permitirá establecer políticas y procedimientos para una mejor supervisión del inventario. La metodología propuesta incluye el uso de técnicas estadísticas para evaluar la situación actual del concesionario y el impacto de una ineficiente gestión de inventarios de repuestos. También se aplicará la correlación de Spearman, la prueba t de muestras independientes. Asimismo, se aplicarán cuestionarios sobre control interno basados en el método COSO ERM y encuestas al personal para ello se delimitará la muestra no probabilística intencional en la que se seleccionó a aquellos empleados que tienen mayor conocimiento y responsabilidad en los procesos de control interno y gestión de inventarios. Los resultados obtenidos muestran que el concesionario carece de procesos y normas para la gestión de repuestos, lo que provoca imprecisiones en los saldos contables y datos desactualizados del stock. Esta falta de control interno puede llevar a desajustes financieros y operativos, resultando en la pérdida de clientes por falta de repuestos disponibles. En conclusión, la investigación demostró que la falta de estandarización y control interno en el concesionario Automotores Antonio Larrea genera ineficiencia en la gestión de inventarios y aumenta el riesgo de errores.

Palabras clave Control interno, gestión de inventarios, procesos, COSO

ABSTRACT

This scientific article addresses the importance of evaluating an internal control system at the Automotores Antonio Larrea dealership to improve spare parts inventory management. The main objective is to analyze and the review the same by collecting data, in order to optimize efficiency in inventory management. To achieve this objective, three specific objectives have been defined, which are: the identification of deficiencies in the spare parts acquisition and replacement processes using surveys, the COSO method will also be applied to evaluate internal control, and will allow the establishment of policies and procedures for better inventory supervision. The proposed methodology includes the use of statistical techniques to evaluate the current situation of the dealership and the impact of inefficient spare parts inventory management. Spearman's correlation and the independent samples t test will also be applied. Likewise,

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questionnaires on internal control based on the COSO ERM method and surveys will be applied to the staff. To do this, the intentional non-probabilistic sample will be delimited in which those employees who have greater knowledge and responsibility in the internal control and inventory management processes were selected. The results obtained show that the dealership lacks processes and standards for spare parts management, which causes inaccuracies in accounting balances and outdated stock data. This lack of internal control can lead to financial and operational imbalances, resulting in the loss of customers due to a lack of available spare parts. In conclusion, the research showed that the lack of standardization and internal control at the Automotores Antonio Larrea dealership generates inefficiency in inventory management and increases the risk of errors.

Keywords Internal control, inventory management, processes, COSO

INTRODUCTION

Automotores Antonio Larrea, a company based in Riobamba, has more than thirty years of experience in the automotive market, dedicated to the sale of vehicles and after-sales services, and has established itself as a reference in the province of Chimborazo. The dealership is the only authorized dealer in the province for recognized brands such as NISSAN, RENAULT, FOTÓN and BAIC, which allows it to offer a wide range of options to its customers.

Additionally, Automotores Antonio Larrea has a solid vehicle offering and stands out for its authorized after-sales workshops, which are designed to guarantee comprehensive service. These workshops not only perform preventive and corrective maintenance, but also specialize in the repair of damaged vehicles, and have a wide range of original brand spare parts, ensuring that customers receive high-quality and reliable service.

Thanks to its focus on excellence and its commitment to customer satisfaction, Automotores Antonio Larrea has remained a leader in the sector, offering not only quality products but also after-sales support that ensures the performance and durability of the vehicles sold.

Considering that inventories are crucial for any organization, as they significantly influence strategic decision-making (1). In this context, for any vehicle dealership, efficient management of these inventories is essential for the proper commercialization of spare parts. Precise inventory control allows the company to accurately record the quantities of spare parts available, which is fundamental both for timely supply and for meeting customer demand (2).

Inventories are defined as assets that can influence balance sheet results, either positively or negatively. Obtaining favorable results depends on the effective management and control that the company exercises over them (3). Proper administration of these resources not only guarantees the continuous operability of after-sales workshops, but is also key to avoiding financial losses (4).

Inadequate management of these inventories can have a negative impact on the financial statements, leading to imbalances that, in extreme cases, could put the economic stability of the company at risk. Considering that management control involves the planning, supervision and adjustment of activities within an organization to ensure that the established objectives are met. This process includes the definition of performance standards, monitoring of progress and decision-making to correct deviations and foster continuous improvement (5).

The main objective of inventory management is to ensure that the necessary resources are available at the right time, under the required conditions and in the correct location (6). Therefore, proper inventory management not only directly impacts the company's financial statements, but also guarantees the continuous availability of essential spare parts for vehicle maintenance and repair.

The results indicate that the implementation of internal control is decisive for the proper functioning of entities, since its absence can lead to failures and risks. Entities that adopted internal control achieved improvements in their processes and a reduction in errors (7).

Currently, companies face challenges related to inventory management, as they must handle a large number of references to minimize sales losses and reduce low-turnover stock (8). As a result, poorly managed inventory can lead to the unnecessary accumulation of products, immobilizing capital that could be used more effectively in other areas of the business (9).

Consequently, in a vehicle dealership, internal control, monitoring and proper management of spare parts inventories is crucial for business operations, but it also represents a significant challenge due to the diversity and volume of the items handled, ranging from large and expensive parts to small elements that are difficult to control.

Inventory management impacts the financial statements of companies; many organizations do not carry out adequate control of their inventories and lack effective and efficient management of them, which can lead to financial imbalances and, in extreme cases, bankruptcy (10).

In vehicle dealerships, this lack of control is manifested in outdated inventories and the absence of automated systems, which generates accounting and financial problems that distort information and affect the company's ability to manage its resources efficiently (11).

Disorganization in inventories can generate delays in service, errors in accounting-financial records, and loss of products. The implementation of an inventory control system that integrates physical and digital tools can improve the accuracy of records and optimize inventory flow, which will reduce the problems detected and contribute to greater operational and financial efficiency in dealerships (5).

Internal control can be evaluated through the COSO method and its variations COSO I, COSO II, COSO ERM. Taking into account that the COSO model focuses on achieving organizational objectives by ensuring that internal controls do not act as obstacles, but as facilitators of processes. These controls are designed to enable and foster the achievement of objectives, addressing and overcoming the risks that could prevent their attainment (12).

The components of internal control according to the COSO framework include the following: Control Environment, Risk Assessment, Control Activities, Communication and Monitoring (11). In the control environment, the ethics and importance of internal control in the organization are defined; risk assessment allows the identification and analysis of risks that could affect organizational objectives; in the control activities component, the aim is to establish policies and procedures to comply with management guidelines. In the communication stage, the collection and dissemination of important information is ensured, and finally monitoring supervises the functioning of internal control.

Also, another method of internal control evaluation applicable to inventory management is the "COSO ERM (Enterprise Risk Management) model," which has developed a conceptual structure for enterprise risk management. This structure facilitates the formulation and monitoring of key processes in risk administration, supporting and improving measures within an organization (13).

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The supply chain is a key process in which the steps to be followed in an inventory requirement are systematized sequentially; in the case of the automotive sector, it begins with the search in the catalog at the national or international level, giving rise to importation if necessary. According to availability, the origin of the spare part is chosen: local, national or international (14). International orders take approximately 45 days, while national ones are delivered in 3 business days and local ones in one or two days. This structured process guarantees efficient and adaptive management, ensuring adequate delivery times according to origin (15).

The main objective of this research is to thoroughly analyze the influence of the internal control system at the Automotores Antonio Larrea dealership, with the purpose of identifying areas for improvement in the management of spare parts inventories at the Automotores Antonio Larrea dealership, in order to identify areas for improvement and propose strategies to optimize said management.

MATERIALS AND METHODS

To address the issue of the influence of internal control and monitoring on the inefficient management of spare parts inventories in a dealership, the methodology was based on a mixed approach. The research design used is exploratory and descriptive. This research explored the current situation and allowed the identification of deficiencies in internal control and inventory management at the dealership. The approach used is the mixed approach because qualitative tools were combined to understand the perceptions and experiences of the staff, with a quantitative analysis perspective, which allowed the evaluation of data related to inventory management, which were obtained through the application of research instruments.

The population and sample were delimited, considering as the population the dealership staff involved in the handling and control of inventories. The sample was segmented as intentional non-probabilistic, in which staff considered to be in the spare parts-inventories-after-sales workshop areas were selected, and staff with greater knowledge and responsibility were chosen. The data collection instruments applied were: surveys with semi-structured questions that allowed qualitative information to be collected on the staff's perceptions of deficiencies in internal control, current processes and challenges in inventory management.

Another of the methods employed were internal control questionnaires that collected quantitative data on the level of compliance with policies and procedures, the frequency of errors in records, and the effectiveness of the tools used for inventory control. The documentary review technique was carried out, which includes the analysis of accounting records, audit reports, inventory reports, and existing policies, to identify inconsistencies and evaluate the impact of errors on financial information. Direct observation was also used, which included visits to the warehouse and inventory areas to observe the processes in action, identifying operational problems and verifying compliance with documented procedures.

Statistical techniques such as Spearman's correlation and the t-test were applied.

Parametric tests are statistical tools used to measure the relationship between a quantitative variable and a categorical one. To apply them, certain conditions are required, such as that the quantitative variable follows a normal distribution in the groups compared and that the variances are homogeneous among the populations. These tests include the t-test, which is used when one or two samples are compared (16).

Starting from the fact that correlation is a statistical measure that evaluates the strength of the linear relationship between two quantitative or ordinal variables. A correlation coefficient close to 1 indicates a strong association, while a value close to zero suggests that there is no relationship or that it is random. Pearson's coefficient measures linear relationships in continuous variables with normal distribution, and

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Spearman's is applied to ordinal variables organized in ranks, which change simultaneously but not in a constant manner (17).

Spearman's correlation was used because it made it possible to identify how deficiencies and efficiency in inventory management are related; it also indicated whether when deficiencies increase, efficiency tends to decrease, without expecting the relationship to be direct.

The t-test was applied, which made it possible to compare the number of incidents before and after evaluating internal control with the COSO ERM method at the dealership, with the objective of evaluating whether there has been a significant improvement in the results. It was possible to demonstrate that, in effect, there are significant differences in inventory management according to the degree of application of these policies.

RESULTS

In the research carried out at the Automotores Antonio Larrea dealership, a mixed methodology was used, combining qualitative and quantitative approaches to evaluate the efficiency of the internal control system and its impact on spare parts inventory management. The results obtained from surveys of staff, internal control questionnaires based on the COSO ERM method, and statistical analysis using techniques such as Spearman's correlation and the t-test provide a comprehensive view of the existing deficiencies and the necessary areas for improvement. The results of the applied methodology indicated that the surveys directed at the dealership staff revealed a series of significant problems in inventory management.

Figure 1. Efficiency of the Inventory Control System

Figure 1 shows the efficiency of the inventory control system at the Antonio Larrea dealership, according to the perceptions of the respondents. 79% of the participants consider that the system is ineffective, which suggests important problems in the dealership's capacity to carry out adequate monitoring and internal control of spare parts inventories.

This may be related to the lack of standardized processes for the reception and recording of spare parts, generating outdated data and errors in accounting reconciliation, which negatively affects inventory management. On the other hand, 21% rate the system as somewhat effective, which indicates that, although there is a certain degree of functionality, the system still does not fully meet the expectations or operational requirements for efficient control. It is imperative that improvement strategies be implemented in the standardization of processes and the use of technologies that allow more precise and agile control of stock levels, in order to reduce errors and optimize the management of spare parts.

Figure 2. Process Standardization

Figure 2 reveals the results of the respondents' perception regarding process standardization in the inventory control system of the Antonio Larrea dealership. 100% of the participants totally disagree that the current processes are properly standardized. This unanimity indicates a clear deficiency in the implementation of uniform procedures for inventory management, which could be contributing to the observed ineffectiveness in the monitoring and control of spare parts stock levels.

The lack of standardization may be causing lack of coordination in the reception and recording of spare parts, which results in inconsistent information, errors in accounting reconciliations and problems in the timely replenishment of inventories. This situation highlights the urgency of developing strategies that promote uniformity in processes, through the implementation of clear protocols and the use of

technological tools that automate and systematize the tasks involved in inventory management, which would significantly improve internal control.

Figure 3. Process of identification and evaluation of risks associated with inventories

Figure 3 reflects the perceptions regarding the process of identification and evaluation of risks associated with inventories at the Antonio Larrea dealership. 80% of the respondents state that there is no formal process for the identification and evaluation of risks, while 20% indicate that they are not sure about the existence of such a process.

This result evidences a serious lack of formalization and structure in the management of risks related to inventories, which is crucial to guarantee effective internal control. The absence of a clearly established process puts the company's capacity to anticipate and mitigate problems that may affect the inventory level, such as stockouts, losses or damage, at risk.

Furthermore, the fact that a significant percentage of the respondents are not sure suggests a lack of communication and training regarding risk control policies, which is a gap that should be addressed immediately.

For its part, "as shown in Table 1," the results of the application of the internal control questionnaire based on the COSO ERM framework provided a detailed view of the internal control situation at the dealership. The results showed that the dealership presents deficiencies in several of the internal control components.

In the Control Environment component, a lack of clarity was identified in the policies and procedures related to inventory management. In Risk Assessment, the dealership does not have a formalized process to identify and evaluate the risks associated with inventory management, which increases the probability of errors and losses.

Regarding Control Activities, the absence of documented and consistent procedures for the reception and recording of spare parts was evidenced, which prevents effective control over inventory levels. Communication and Monitoring also showed weaknesses, with a lack of regular reports and feedback on the status of the inventory, as well as scarce supervision of control procedures.

Table 1. Evaluation of internal control components through COSO ERM questionnaire

Component	Control Level (1-5)
Control Environment	2
Risk Assessment	1.5
Control Activities	2
Information and Communication	2.5
Monitoring	2

Note: The scores reflect a qualitative evaluation of internal control at the dealership.

Regarding the statistical analysis applied, in which Spearman's correlation techniques and the t-test provided quantitative evidence of the deficiencies in inventory management.

Regarding Spearman's correlation, this analysis made it possible to identify a significant negative correlation between efficiency in inventory management and the level of reported deficiencies. That is, the greater the number of deficiencies in internal control processes, the lower the efficiency in inventory

management. This finding underscores the inverse relationship between the quality of internal control and the effectiveness in inventory administration.

Figure 4. Scatter diagram of Spearman correlation

In this data set shown in Figure 4, it can be identified that as the number of deficiencies in internal control increases, efficiency in inventory management decreases, which illustrates a negative correlation. The sample t-test was used to compare the number of incidents in inventory management before and after the implementation of the COSO method. The results indicated a significant improvement in internal control after the application of the COSO method internal control evaluation questionnaire.

The incidents related to errors in inventory recording and data outdatedness were reduced by 40% compared to the period prior to the initial situation, which suggests that the application of the COSO method as evaluation contributed to improving the knowledge of the responsible departments.

Figure 5. t-test of deficiencies vs. efficacy before and after COSO evaluation

This Figure 5 evidences the improvement in inventory management after the evaluation of the COSO method, reflecting the decrease in the number of incidents and the effective application of policies, although not formalized, since the collaborators found that processes and procedures did exist, which, although not documented, were applied empirically; therefore, after the evaluation and socialization of the internal control questionnaire with the areas involved, the main shortcomings and areas of opportunity for improvement were quickly established.

The technique made it possible to compare performance in inventory management according to different levels of implementation of policies and procedures. The results showed significant differences in inventory management according to the degree of application of these policies. Those departments with a more rigorous implementation of policies and procedures showed more efficient management and fewer incidents, corroborating the need to establish clear policies and follow standardized procedures.

The application of these research methodologies has made it possible to clearly identify the deficiencies in the internal control system and in inventory management at the Automotores Antonio Larrea dealership. The main deficient areas are detailed below:

- a) Lack of Policies and Procedures: The dealership lacks documented and standardized policies and procedures for the reception and recording of spare parts. This contributes to inventory errors and inefficient management.
- b) Deficit in the Supply Chain: The lack of a well-defined supply chain affects the timely availability of spare parts and coordination between suppliers and the dealership.
- c) Need for Adequate Internal Control: The evaluation according to the COSO ERM method has proven effective for improving internal control, but a broader and more rigorous application is required to achieve efficient inventory management.

DISCUSSION

In this study, a lack of standardized policies and procedures was identified, a finding that coincides with the conclusions of Mendoza et al., who emphasize that the absence of effective internal control can lead to the generation of inaccurate information and, consequently, to erroneous decision-making. This lack of standardization not only affects the accuracy of inventory records, but also hinders coordination among the

different departments involved, such as reception, warehouse and workshops. The resulting lack of coordination contributes to inefficient inventory management, aggravating operational deficiencies and increasing the risk of losses (17).

The research carried out at the Antonio Larrea dealership reveals important deficiencies in the internal control system and inventory management. These results coincide with the findings of (18), who affirm that the lack of standardized and formalized processes in inventory management can generate operational inefficiency and loss of resources. In the case of the dealership, the absence of adequate control in the reception and recording of spare parts has led to outdated data and accounting errors, which seriously affects the capacity to maintain precise inventory control.

Regarding the lack of standardization, 100% of the respondents disagreed with the existence of properly formalized processes, which reflects a serious deficiency that has also been observed in other investigations. The implementation of standardized processes is crucial to reduce errors and improve accuracy in inventory control. In addition, the lack of standardization not only affects inventory accuracy, but also limits the company's capacity to respond effectively to variations in spare parts demand, which can have a negative impact on customer satisfaction and performance (19).

The significant negative evaluation between the number of deficiencies in internal control and efficiency in inventory management, identified through the Spearman evaluation test (20). The improvement in inventory management after the implementation of the COSO ERM method, which reduced incidents by 40%, demonstrates that structured internal control tools, when applied correctly, can have a positive impact on operational management. This improvement is consistent with studies on the adoption of a formal internal control framework, such as COSO ERM, which allows organizations to better manage the risks associated with inventory administration and optimize the processes related to the supply chain. Overall, the results of the Antonio Larrea dealership underscore the importance of applying monitoring and internal control strategies based on proven models, such as COSO, to ensure inventory management (21).

The results obtained in this research confirm the critical importance of internal control in the optimization of inventory management, which is in line with previous studies that address various areas of organizational management. As other authors have pointed out, "robust internal control is fundamental to ensure the veracity, reliability and transparency of financial information" (22), aspects that are clearly reflected in the inventory management of the Automotores Antonio Larrea dealership.

On the other hand, studies carried out in Ecuador, particularly "in an automobile commercialization company in Guayaquil, highlight the significant influence of internal control on financial management, especially in areas such as treasury and accounts payable" (23). Although the focus of that study was on financial management, the problems identified in inventory management at Automotores Antonio Larrea, such as interdepartmental lack of coordination and the absence of an effective supply chain, present similarities with the financial challenges that affect the liquidity and solvency of the company studied by Zambrano and Cortés.

The results in the research entitled "Internal control and COSO model in business administrative and financial management" have revealed that, in Ecuador, several deficiencies have been identified in the control of activities in companies, where many do not have internal control policies. These deficient practices generate operational imbalances and problems in financial and administrative management. It is crucial to carefully monitor daily transactions, since the lack of support can facilitate fraud within the organization (24).

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From the aforementioned research studies, it can be referred that all underline that the implementation of formally defined policies and processes through rigorous internal control can contribute to a significant improvement in operational and financial efficiency, as well as to reducing incidents in processes. In particular, the study carried out at Automotores Antonio Larrea reveals that deficiencies in inventory control not only affect daily operations, but also have the potential to negatively impact the company's financial situation in the long term. This suggests that adequate internal control is crucial not only for financial management, but also to maintain operational efficiency in key areas such as inventory handling.

The evaluation of internal control through the COSO ERM method in this study has demonstrated significant improvements in inventory management, because the staff identifies which are the deficient and conflicting areas, as well as the practices that empirically exist that should be documented and implemented. This reinforces Mendoza's proposal when addressing issues about the importance of robust internal control for efficient administration.

Nevertheless, unlike the exclusive focus on financial management observed in the study by Zambrano and Cortés, this analysis focuses on the operational management of inventories, highlighting that a solid internal control system is essential not only for finances, but also to ensure efficiency in the administration of inventories and other critical operational areas. Management control facilitates changes in organizations by providing the structure and instruments to effectively plan, monitor and adjust processes (25).

CONCLUSIONS

The research evidences that the Automotores Antonio Larrea dealership presents important deficiencies in its internal control system, especially in the management of spare parts inventories. The lack of standardized and documented processes generates inefficiency in the monitoring and control of stock levels, which directly affects operations and the capacity to respond to market needs. It is fundamental to establish clear policies and uniform procedures to improve accuracy and efficiency in inventory management.

The absence of a formal process for the identification and evaluation of risks in inventory management increases the probability of errors and losses. The fact that a large majority of the respondents do not identify established processes underscores the need to implement mechanisms that allow risks to be managed more efficiently and to avoid negative impacts on the operational and financial functioning of the dealership.

The results reflect that there is a direct relationship between the lack of adequate internal control and low efficiency in inventory management. The implementation of a more structured internal control system, supported by proven methodologies, will contribute to significantly improving operational efficiency and decision-making, reducing incidents and optimizing the use of available resources.

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