WWW.ECUACIENTIFICA.COM

Ecuacientífica
REVISTA MULTIDISCIPLINARIA

ISSN: 3091 -1796

# REVISTA MULTIDISCIPLINARIA ECUACIENTÍFICA

Volumen 1
Número 2

DOI: https://doi.org/10.56519/4nbz8g29



ISTOG

Frecuencia bianual: noviembre - abril
01 - 11 - 2023

Ecuacientífica
REVISTA MULTIDISCIPLINARIA
ISSN
Vol. 1, No. 2, PP.7-22
Noviembre - abril 2023

# VIABILIDAD FINANCIERA DE LA IMPLEMENTACIÓN DE SST EN LA ESTACIÓN DE SERVICIO LOS ÁLAMOS

# FINANCIAL FEASIBILITY OF SST IMPLEMENTATION AT LOS ÁLAMOS SERVICE STATION

Fabian Aguirre[1]
Independent researcher
aguirreluna.fabian@hotmail.com
https://orcid.org/0000-0001-8768-4780

*Fecha de recepción: 03-10-2023 / Fecha de aceptación: 17-10-2023 / Fecha de publicación: 01-11-2023*

**RESUMEN**

La evaluación financiera ha desempeñado un papel crucial en la gestión empresarial, proporcionando herramientas para analizar la viabilidad y rentabilidad de diversos proyectos. En el sector de estaciones de servicio, la implementación de sistemas de seguridad y salud en el trabajo (SST) es fundamental debido a la naturaleza riesgosa de sus operaciones. El problema de investigación nace debido a que la estación de servicio "Los Álamos" enfrenta dificultades para justificar financieramente la inversión en la Gestión Técnica de SST, lo que genera incertidumbre en la toma de decisiones y desafía su capacidad de cumplir con las normativas y garantizar un entorno laboral seguro. El objetivo de este estudio es evaluar detalladamente el impacto financiero de la implementación de la Gestión Técnica de SST en la estación de servicio "Los Álamos". En la metodología, se utilizó un enfoque cuantitativo, con análisis vertical y horizontal de los datos financieros recopilados a través de encuestas y revisión documental. Se analizaron los costos iniciales y los beneficios económicos de la implementación de medidas de seguridad. Los resultados, lograron evidenciar la identificación y cuantificación de los costos de implementación de diversas medidas de seguridad en los puestos de trabajo, destacando la necesidad de crear un entorno laboral más seguro. Las proyecciones financieras muestran que, si bien la inversión inicial es considerable, la implementación de la Gestión Técnica de SST es viable y sostenible a largo plazo. En conclusión, la inversión en Gestión Técnica de SST, a pesar de los costos iniciales, es financieramente viable y se justifica por la reducción de accidentes, ausentismo y sanciones, así como por el fortalecimiento de la posición competitiva de la empresa.

**Palabras clave**

Implementación, seguridad, salud laboral, finanzas, análisis

**ABSTRACT**

Financial evaluation has played a crucial role in business management, providing tools to analyze the feasibility and profitability of various projects. In the service station sector, the implementation of occupational safety and health (OSH) systems is fundamental due to the risky nature of its operations. The research problem arises because the service station "Los Alamos" faces difficulties in financially justifying the

** English translation of the original article published in Ecuacientífica, Vol. 1, No. 2, pp. 7-22.*

investment in OSH Technical Management, which generates uncertainty in decision making and challenges its ability to comply with regulations and ensure a safe working environment. The objective of this study is to evaluate in detail the financial impact of implementing OSH Technical Management at the "Los Alamos" service station. In the methodology, a quantitative approach was used, with vertical and horizontal analysis of financial data collected through surveys and documentary review. The initial costs and economic benefits of implementing safety measures were analyzed. The results showed the identification and quantification of the costs of implementing various safety measures in the workplace, highlighting the need to create a safer work environment. The financial projections show that, although the initial investment is considerable, the implementation of OSH Technical Management is viable and sustainable in the long term. In conclusion, the investment in OSH Technical Management, despite the initial costs, is financially viable and justified by the reduction of accidents, absenteeism and penalties, as well as by the strengthening of the company's competitive position.

**Keywords**

Implementation, safety, occupational health, finance, analysis

## INTRODUCTION

Financial evaluation has played a fundamental and crucial role in the field of business management throughout history, providing organizations with a set of essential tools to carry out a thorough and meticulous analysis of the viability, stability, and profitability of the various projects they decide to undertake. In its initial stages, this concept was limited to relatively simple calculations that focused on profits and losses. However, over time, it has undergone a notable evolution that has expanded its horizons and applications in the business context; therefore, currently, much more complex and sophisticated techniques have been incorporated that allow companies to make more informed, strategic, and well-founded decisions in the management of their resources, as well as in long-term planning (1).

Particularly in sectors considered high-risk, such as fuel service stations, financial evaluation expands considerably to include not only the analysis of immediate profitability, but also the implementation of systems that ensure occupational safety and health (OSH). This need becomes especially critical in a context where companies handle highly flammable products, which requires meticulous and rigorous management to prevent accidents and minimize the economic losses that may arise from non-compliance with established regulations (2).

From a macroeconomic perspective, numerous governments and international institutions have promoted the creation of policies that oblige companies to establish robust technical management systems in OSH, which not only seek to ensure compliance with the legal regulations in force in each region, but also have the purpose of optimizing the use of available resources, covering both financial capital and human talent.

** English translation of the original article published in Ecuacientífica, Vol. 1, No. 2, pp. 7-22.*

In the Latin American context, a notable increase in investment destined for these systems has been observed, especially in industries that present high occupational risks, which highlights the importance of implementing stricter and more effective safety protocols (3).

However, despite the growing pressure to adhere to these regulations, many companies, such as the "Los Álamos" service station located in Ecuador, face serious difficulties when trying to evaluate the financial impact of their investments in OSH.

The lack of solid and systematic financial control has complicated the justification of the profitability and viability of such investments, generating uncertainty in decision-making and challenging the ability of organizations to comply with regulations and ensure a safe working environment (5).

Furthermore, in the research conducted by (4) on the financial diagnosis of the implementation of the OSH Management System in the PRISPMA company, the importance of companies carrying out this process to comply with the national regulations related to this aspect is exposed, for which companies must have a budget; therefore, it is essential that the development of the SG-SST is supervised monthly and the impact is evaluated.

This evaluation is of the utmost importance not only to guarantee compliance with safety regulations, but it is also vital to ensure that the investment in OSH is financially sustainable in the long term. In this way, it will contribute to the sustainability and productivity of the service station, while offering a model that can be replicated in other companies in the sector that are seeking to implement efficient and effective management in terms of occupational safety and health.

This approach will not only benefit the organization in question, but can also serve as a valuable reference for other entities that face similar challenges in OSH management, thus promoting a culture of safety, responsibility, and efficiency in the sector.

For the following research, two types of methods were used, which are mentioned below:

**Vertical analysis method**

According to (6), it is mentioned that the method is used to analyze financial statements, with a single determined date and two applicable techniques, which are:

Integral probabilities: denominates the part that an individual item represents within a determined group of the financial statements.

Simple justification: compare the figures of more than one financial statement; in other words, the mathematical ratio obtained between the figures of more than one group of financial statements of a specific company.

This technique used in accounting and finance to evaluate the structure and composition of the financial statements allows the comparison of the relative importance of each item in relation to the common total; unfortunately, small details that limit the method must be taken into account, such as the inability of the

** English translation of the original article published in Ecuacientífica, Vol. 1, No. 2, pp. 7-22.*

percentages to reflect the real size of the items, the relative values may be affected by inflation, and that the financial data must be precise and current to be useful.

**Horizontal analysis method**

It compares homogeneous financial data in two or more consecutive periods, thus determining increases and decreases in the variations of the accounts from one period to another (7); the degree of importance that the method assigns to the report of changes and activities is considered of great breadth, clearly showing whether the results will be positive or negative (8).

Two types of techniques are applied to use the horizontal method:

Variations in increases and decreases: through the calculation of increases and decreases, the monetary concepts of the financial statements are expressed in the stability of one period compared to others.

Trends of increases and decreases: the calculation of financial rises and falls in percentages is stimulated, of each quotation in the stability of a financial statement, thus giving the advantage of determining the relevance in the variations of the figures of the financial statements (9).

Therefore, the present study has as its primary objective to evaluate in detail the financial impact that the implementation of OSH Technical Management entails in the "Los Álamos" service station. To achieve this objective, a thorough and meticulous analysis of the initial costs associated with the adoption of safety measures will be carried out, as well as of the economic benefits that arise from the reduction of occupational accidents and absenteeism. In addition, a financial model will be developed that will allow comparing the economic projections both with and without the investment in OSH, thus facilitating the determination of its effect on the overall profitability of the company.

## MATERIALS AND METHODS

**Research method:**

In the present study, a quantitative approach has been chosen, characterized by the systematic collection and rigorous analysis of financial data from the "Los Álamos" service station. This approach allows not only the obtaining of precise and objective numerical data, but also provides a solid basis for carrying out an exhaustive evaluation of the financial viability of occupational safety and health (OSH) measures. Through the implementation of well-structured and rigorous analytical methods, the aim is to obtain conclusions that are both robust and well-founded, thus contributing to a deeper understanding of the economic impact of the interventions adopted.

**Data collection**

It was carried out through a systematic and structured approach, ensuring that relevant and precise data were obtained for the analysis. First, a survey form was designed that was distributed among the administrative and operational personnel of

** English translation of the original article published in Ecuacientífica, Vol. 1, No. 2, pp. 7-22.*

the "Los Álamos" service station. This form included specific questions about the costs associated with the implementation of occupational safety and health (OSH) measures, as well as about the frequency of occupational accidents and absenteeism levels.

In addition to the surveys, an exhaustive examination of existing financial documentation was carried out, which comprised cost reports, accident records, and historical absenteeism data. Access to these records was obtained through the human resources and finance department of the station, thus ensuring that the information used was both current and relevant. The combination of surveys and document analysis allowed a triangulation of data, which strengthens the validity and reliability of the results obtained.

**Study selection**

It was a methodical process that was carried out in several stages. First, inclusion and exclusion criteria were established to determine which studies would be considered for the analysis. The inclusion criteria were:

a) Studies that addressed the implementation of OSH measures in service stations or similar contexts.

b) Research published in the last five years, thus ensuring that the information was relevant and current.

c) Documentation that included data on costs and benefits associated with the implementation of OSH.

On the other hand, exclusion criteria were established that comprised:

d) Studies that did not provide specific data on the relationship between investments in OSH and their financial impacts.

e) Research that was not peer-reviewed or that lacked methodological rigor.

f) Literature that did not focus on the service station sector or that did not present data applicable to this context.

Once the criteria were defined, a search was carried out in academic databases such as SCOPUS, LATINDEX, and Google Scholar. Keywords such as "occupational safety and health", "cost-benefit analysis in OSH", and "financial impact of OSH in service stations" were used. After the initial search, the abstracts of the studies were reviewed to determine their relevance, and those that met the established criteria were selected.

**Data analysis:**

For the analysis of the collected data, the vertical and horizontal analysis methods were applied, where the horizontal method allowed comparing homogeneous financial data at different times, while the vertical analysis allows evaluating the composition and structure of the financial statements. The use of these analytical approaches allows effective alignment with the research objectives.

## RESULTS

** English translation of the original article published in Ecuacientífica, Vol. 1, No. 2, pp. 7-22.*

Ecuacientifica
ISSN
Vol. 1, No. 2, PP.7-22
Noviembre - abril 2023

The results obtained affirm the need to identify and evaluate the costs of implementing safety and protection measures in different work positions within a fuel service station, analyzing three types of positions: the administrator, the fuel dispenser, and the tanker truck driver. In this way, various risk conditions or situations are observed, such as criminal threats for the administrator, the lack of adequate conditions for night work and the handling of risks associated with heights or slippery surfaces for fuel dispensers, and exposure to flammable substances, traffic accidents, leaks, as well as spills for the tanker truck driver.

Due to this, specific measures are proposed, such as the implementation of panic buttons, rest shelters, and provision of personal protective equipment (PPE), highlighting the need to create a safer work environment (10). In addition, the table incorporates the costs associated with each of these measures, allowing those responsible to evaluate their financial viability.

The reason for this development arises from the need to mitigate risks in the work environment and comply with safety regulations, guaranteeing the protection of both workers and the company's assets, while optimizing the resources available for these improvements.

**Table 1: Implementation costs**

| N° | Work position | Condition | Measure | Cost |
|---|---|---|---|---|
| 1 | Administrator | Criminal threat | Request police protection | No cost |
| | | | Implement a panic button in the administration office | $450 |
| | | Workers do not have a workstation to spend the night (low temperatures) | Implement a shelter so that workers can spend the night during night work | $100 |
| | | | Provision of thermal work clothing that is also antistatic and fireproof | $600 |
| 2 | Fuel dispenser | Lack of harness use, tanker surface with fuel residues, slippery surface | Provision of a harness and lifeline for work at height | $120 |
| | | | Training on work at height and PPE use | $150 |
| | | | Supervision during the fuel unloading process | $30 |
| 3 | | Exposure to vapors produced by gasoline and diesel in unloading processes | Provision of respirator with filters for fuel unloading | $110 |

** English translation of the original article published in Ecuacientífica, Vol. 1, No. 2, pp. 7-22.*

| | | | | |
|---|---|---|---|---|
| | | | Direct supervision of PPE use | $48 |
| | | Exposure to contact with diesel and gasoline. Dermal route of entry into the body | Provision of nitrile gloves for dispensing and unloading of fuels | $25 |
| | | Musculoskeletal pain | Implementation of a shelter for rest periods | Value already considered |
| | | | Provision of ergonomic safety shoes | $150 |
| | | Night work | Implement a shelter for night work | Value already considered |
| | | Responsibility for receiving cash sales money | Training on citizen security | No cost |
| | | | Provision of panic buttons at dispensing islands | Value already considered |
| 4 | | Verbal and physical aggression | Training on customer service and handling difficult situations | $180 |
| | | Possible sources of fire at dispensing islands | Elaboration, implementation and training of a safe work procedure for unloading and dispensing fuels | $350 |
| | | | Supervision during the work shift | $80 |
| 5 | Tanker truck driver | Lack of information on existing risk types | Implementation of warning, obligation and prohibition signage | $100 |
| | | Work at height (over 1.80 meters) | Implementation of a safe work procedure for fuel unloading | Value already considered |
| | | | Provision of harness and lifeline for work at height | Value already considered |
| | | Projection of solids or | Provision of safety glasses | $10 |

| | | | | |
|---|---|---|---|---|
| | | liquids | | |
| | | Handling of chemicals | Provision of nitrile gloves | Value already considered |
| | | Monthly inspections / transport of chemical products | Monthly inspections / Training on work procedure | $60 / Value already considered |

Table 1 presents detailed information on the types of mitigation measures and the costs associated with their implementation in the positions of administrator, fuel dispenser, and tanker truck driver. The types of measures address risks of a criminal nature, extreme weather, ergonomic, by-products with design and operation restrictions. The administrator presents a criminal risk where the installation of a panic button in the office at a cost of $450 was proposed, aided by police protection at no extra cost. That directed at the dispenser highlighted exposure to dangerous conditions, the lack of thermal protection at night, and the high incidence of fuel vapors (11).

The fuel dispenser is especially exposed to dangerous conditions of lack of thermal protection at night and coming into contact with hydrocarbon vapors, which requires the implementation of shelters, provision of thermal clothing, gloves, and respirators, and training in PPE. According to Table 1, the clothing and equipment represent the highest costs. Work garments cost $600 and the safe procedure costs $350.

Regarding the tanker truck driver, the risks involve work at height and the handling of dangerous chemicals. It consists of securing with a harness, safety glasses, and gloves, work supervision, and training in safe procedures. It is vital for the safety of the worker in the unloading and transport of fuels, due to the protection it provides in case of falls and splashes.


*Figure 1: Projections of losses and gains per year with investment*

** English translation of the original article published in Ecuacientífica, Vol. 1, No. 2, pp. 7-22.*

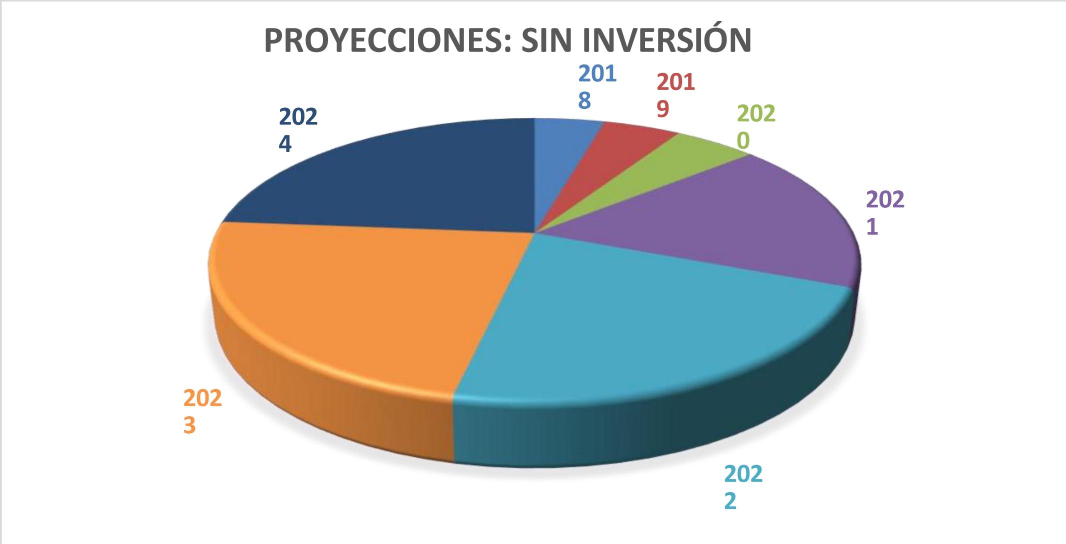


*Figure 2: Projections of losses and gains per year without investment*

In Figures 1 and 2, variations to be considered in the interpretation of the horizontal analysis are shown in both items. In the box labeled "Without investment," an important growth is observed starting from the year 2021, followed by financial stability in the following years. In the box "With investment," growth is experienced until 2021, but then there is a significant drop in the years 2022 and 2023, with a slight recovery in 2024.

In the interpretation through vertical analysis, the item "Without investment" exposes progressive growth, through the demonstration of a constant and sustained increase with respect to the base year (2018); on the contrary, the item "With investment" presents an increase until 2021; from 2022, the values fall and in 2024 they are barely 63.31% of the 2018 value (12).

## DISCUSSION

The meticulous and detailed analysis of the results obtained through the application of the horizontal and vertical analysis methods in the financial evaluation of the implementation of Technical Management of Occupational Safety and Health (TM-OSH) at the "Los Álamos" service station reveals a highly suggestive, significant, and revealing trend in relation to the projected costs and gains for the period from 2018 to 2024.

In the scenario where the investment in TM-OSH is not considered, the company manages to maintain greater short-term profitability, thus avoiding incurring the additional expenses related to the implementation of preventive measures. This result was widely foreseeable, since operating costs are not increased, which allows the financial equilibrium of the organization to be preserved efficiently and effectively (13), (14). However, this situation turns out to be highly detrimental and damaging for the service station in legal terms, since the absence of adequate technical management of OSH implies flagrant and serious non-compliance with national regulations, particularly the Labor Code (15).

Consequently, the company could face severe sanctions and even legal claims derived from possible accidents or occupational diseases, which would not only seriously affect its corporate image and reputation, but could also generate substantial losses due to the abrupt and devastating interruption of its productive activities.

When contrasting these findings with the results of previous studies, such as those conducted by (16), (17), it is possible to confirm in a forceful and conclusive manner that the integral and holistic well-being of collaborators at the physical, psychological, and social levels is fundamental and primordial for their optimal work performance, since occupational health is established as a crucial, determining, and decisive requirement for productivity, sustainable socioeconomic development, and the competitiveness of the environment in which the company operates.

Furthermore, considering that the commercialization of fuels involves their transport and distribution, including filling through dispensers, the health and safety of service station workers becomes a constant, priority, and unavoidable concern in management processes.

Therefore, in the projections of losses or benefits, the investment in TM-OSH must be considered in an unavoidable and strategic manner, since indicators such as the absenteeism rate can negatively, significantly, and detrimentally affect productivity and generate considerable losses for the organization (19).

Similarly, in relation to the research by (20), in the results of the present study, it has been possible to verify that the investment in TM-OSH, particularly the initial investment, has a highly significant, determining, and decisive influence on the company's gains.

Although the initial costs are considerable, this financial strategy turns out to be viable, sustainable, and profitable in the long term, since the gains remain at positive levels, demonstrating its profitability and sustainability over time, and it is fully and forcefully justified in the continuity of its implementation, as it not only contributes to the safety and integral well-being of all personnel, but also considerably reduces the risks of accidents and occupational diseases, the absenteeism derived from these, and the potential expenses for indemnities (21).

Likewise, in the long term, it minimizes the operating losses derived from occupational incidents and significantly and substantially improves the reputation and positioning of the company in the market, which contributes substantially to increasing its productivity, competitiveness, and long-term sustainability. These factors, in addition, protect the organization from economic sanctions for non-compliance with current legal regulations (22), (23), (24).

Finally, in comparison with the previous cases and the research work of (25), it is concluded that, although the gains without investment may appear higher at first glance, there is a high risk and danger that the company may face future economic sanctions and even that workers may file complaints against it for the precarious and deficient working conditions.

## CONCLUSIONS

The thorough analysis of the results obtained in the financial evaluation of the implementation of Technical Management of Occupational Safety and Health (TM-OSH) at the "Los Álamos" service station reveals that, although the initial investment in these safety measures entails considerable costs, this strategy stands as a financially viable and sustainable option in the long term.

The projections of losses and gains demonstrate that, despite the slight temporary decrease in benefits during the first years of implementation, the company manages to maintain a positive and encouraging financial outlook, which fully justifies the continuity and persistence in the adoption of this initiative.

When contrasting the scenarios with and without the investment in TM-OSH, it is evidenced that, although the alternative of not implementing these safety measures presents higher gains in the short term, this approach entails a high risk of regulatory non-compliance and exposure to potential economic sanctions, as well as the possibility of facing labor claims from workers. These negative consequences could generate considerable operating losses and, even more serious, seriously affect the reputation and competitive positioning of the company in the market, seriously compromising its long-term sustainability.

The investment in TM-OSH not only contributes to guaranteeing the integral well-being and occupational health of collaborators, but also translates into a significant reduction in the rates of absenteeism and occupational accident rates. These factors, in turn, positively and favorably impact the productivity and competitiveness of the service station in the long term, strengthening its position in the market and consolidating its sustainability as an organization.

## REFERENCES

1. Orozco C. Gestión de seguridad y salud ocupacional. Universidad Laica Eloy Alfaro de Manabí; 2017. [Cited: September 5, 2024]. Available from: https://repositorio.uleam.edu.ec/handle/123456789/4781

2. Vásquez Artunduaga S, Correa Ruiz J, Hincapié Palmezano L. Medición del impacto en la rentabilidad dada la implementación de un sistema de gestión en seguridad y salud en el trabajo en la empresa americana de curtidos LTDA. & CIA. Rev Tecnol. 2019. [Cited: September 2, 2024]. Available from: https://www.redalyc.org/pdf/849/84938609005.pdf.

3. Orozco CC. Gestión de seguridad y salud ocupacional. 2023. [Cited: September 2, 2024].

4. Saman A. Sistemas de Gestión de la Seguridad y Salud en el Trabajo en Latinoamérica. SG-SST; 2021. [Cited: September 1, 2024]. Available from: https://www.linkedin.com/pulse/sistemas-de-gesti%C3%B3n-la-seguridad-y-salud-en-el-trabajo-ambar-saman/.

** English translation of the original article published in Ecuacientífica, Vol. 1, No. 2, pp. 7-22.*

5. Arias-Mendoza CA. Implantación de un sistema de gestión de seguridad y salud en el trabajo basado en el modelo Ecuador. Universidad Laica Eloy Alfaro de Manabí; 2017. [Cited: September 2, 2024].

6. Martínez R. Implementación de gestión técnica seguridad y salud laboral en el trabajo dentro de la estación de servicio de combustible PDV "Los Álamos" en la ciudad de Riobamba. Universidad de las Américas; 2018. [Cited: September 1, 2024].

7. Nava M. Análisis financiero: una herramienta clave para una gestión financiera eficiente. Rev Venezol Gerenc. 2019; 14:48. [Cited: September 5, 2024].

8. Crudy L, Díaz J. Análisis del impacto de la Seguridad y Salud en el Trabajo, en Pequeñas y Medianas empresas (PyMES) del sector productivo en Colombia. Bucaramanga: Universidad Tecnológica de Santander; 2022. [Cited: September 1, 2024]. Available from: http://repositorio.uts.edu.co:8080/xmlui/bitstream/handle/123456789/12313/F-DC-125%20%20Informe%20Final%20-%20SST%20.pdf?sequence=1&isAllowed=y.

9. Velasco Gallego J, García Ocampo M, Rodríguez Camargo J. Diagnóstico financiero para la implementación del sistema de gestión de seguridad y salud en el trabajo SG-SST en la Empresa PRISPMA "Proyecto PTFW La Calera". Universidad ECCI; 2022. [Cited: September 1, 2024]. Available from: https://repositorio.ecci.edu.co/bitstream/handle/001/780/GSST20270_Tesis%20de%20Grado_Diagnostico%20Financiero%20SG-SST.pdf?sequence=1&isAllowed=y.

10. García Martínez R, et al. Evaluación del desempeño de seguridad y salud en una empresa de impresión. Rev Iberoam Ing Ind. 2019. [Cited: September 1, 2024]. Available from: http://scielo.sld.cu/pdf/rii/v40n2/1815-5936-rii-40-02-136.pdf.

11. Robleño FH. Propuesta de implementación de un sistema de gestión de seguridad y salud ocupacional bajo la norma OSHAS 18001 en una empresa de capacitación técnica para la industria. Pontificia Universidad Católica de Perú; 2012. [Cited: September 1, 2024].

12. Toro L, Vega Falcón B, Romero Fernández J. Los accidentes de trabajo y enfermedades profesionales y su aplicación en la justicia ordinaria. SciELO; 2021. [Cited: September 2, 2024]. Available from: http://scielo.sld.cu/scielo.php?script=sci_arttext&pid=S2218-36202021000200357.

13. Orozco J, Meza. Evaluación financiera de proyecto. Eco ediciones; 2023. [Cited: September 1, 2024]. Available from: https://www.ecoeediciones.com/wp-content/uploads/2017/04/Evaluaci%C3%B3n-financiera-de-proyectos.pdf.

14. Nava M. Análisis financiero: una herramienta clave para una gestión financiera eficiente. Rev Venezol Gerenc. 2019; 14:48.

15. Butrón E. Seguridad y salud en el trabajo: 7 pasos para la implementación práctica y efectiva en prevención de riesgos laborales SG-SST. 1st ed. Bogotá: Ediciones de la U; 2018.

16. Zambrano-Burgos K, Velasquez-Gutierrez M. Evaluación del impacto de las valoraciones financieras, una herramienta decisoria en el manejo del presupuesto de la empresa Pública Municipal del Registro de la Propiedad del cantón Portoviejo, provincia de Manabí. Polo del Conocimiento. 2021; 6:3.

** English translation of the original article published in Ecuacientífica, Vol. 1, No. 2, pp. 7-22.*

ISSN
Vol. 1, No. 2, PP.7-22
Noviembre - abril 2023

17. Estupiñán R. Análisis financiero y de gestión. 3rd ed. Bogotá: Eco Ediciones; 2020.

18. Obando R. Valoración de empresas: qué es y los mejores métodos para realizarla. 2023. [Cited: September 3, 2024]. Available from: https://blog.hubspot.es/sales/valoracion-empresas.

19. Vocetys. Importancia del proceso de evaluación financiera en un proyecto de inversión. 2021. [Cited: September 1, 2024]. Available from: https://www.cetys.mx/noticias/importancia-del-proceso-de-evaluacion-financiera-en-un-proyecto-de-inversion/.

20. Cavassa CR. Seguridad Industrial: Un enfoque integral. 3rd ed. México: Limusa, S. A; 2018.

21. Ortega L. ¿Qué es la gestión de proyectos técnicos? Lean Management. 2021. [Cited: September 2, 2024]. Available from: https://lean-management.site/que-es-la-gestion-de-proyectos-tecnicos/.

22. Martínez Barranco M, Yandun Burbano E. Seguridad y salud ocupacional en Ecuador: Contribución normativa a la responsabilidad social organizacional. 2017. [Cited: September 2, 2024]. Available from: https://doi.org/10.33890/innova.v2.n3.2017.135.

23. Villacrés E. Seguridad y salud en el trabajo en la comercialización de combustible en la provincia de Tungurahua. Universidad Técnica de Ambato; 2023. [Cited: September 4, 2024]. Available from: https://repositorio.uta.edu.ec/bitstream/123456789/32936/1/652%20OE.pdf.

24. Martínez Pérez RG. Implementación de la gestión técnica de la seguridad y salud en el trabajo dentro de la estación de servicio de combustibles PDV Los Álamos en la ciudad de Riobamba [Master's thesis]. Quito: Universidad de las Américas; 2018. Available from: http://dspace.udla.edu.ec/handle/33000/10004.

25. Martínez Pérez RG, Cayán Martínez JC, Naranjo Vargas EM, Prado Orozco DR. Gestión técnica de la seguridad y salud en la E/S de combustible "Los Álamos", ciudad Riobamba. AlfaPublicaciones. 2022; 4(2.2): 105–129. Available from: https://doi.org/10.33262/ap.v4i2.2.219.

** English translation of the original article published in Ecuacientífica, Vol. 1, No. 2, pp. 7-22.*

ISSN: 3091 -1796
Vol. 1, No. 2, PP. 23-33
Noviembre - abril 2023

# ANÁLISIS DEL CUMPLIMIENTO DE NORMATIVAS UAFE PARA PREVENIR LAVADO DE DINERO EN EL SECTOR AUTOMOTRIZ

# ANALYSIS OF COMPLIANCE WITH UAFE REGULATIONS FOR PREVENTING MONEY LAUNDERING IN THE AUTOMOTIVE SECTOR

Jonathan Chiriboga[1]
*Independent researcher*
jonathan.chiriboga@gmail.com
https://orcid.org/0000-0002-2888-0789

Fecha de recepción: 04-06-2023 / Fecha de aceptación: 24-06-2023 / Fecha de publicación: 12-07-2023

**RESUMEN**

Este estudio analiza el impacto de las normativas establecidas por la Unidad de Análisis Financiero y Económico (UAFE) en la prevención del lavado de dinero en el sector automotriz en Ecuador, un sector vulnerable debido al manejo de grandes sumas de dinero en la compra y venta de vehículos. El problema radica en que, a pesar de la existencia de normativas como la política de "Conozca a su Cliente" (KYC) y el reporte de operaciones sospechosas (ROS), el cumplimiento no ha sido uniforme, y persisten deficiencias que facilitan actividades ilícitas. El objetivo principal es evaluar la eficacia de estas normativas y su aplicación en concesionarias automotrices. Se utilizó una metodología mixta, combinando la revisión documental de informes normativos y académicos, entrevistas con expertos del sector automotriz, y análisis de casos prácticos en concesionarias bajo supervisión de la UAFE. Los resultados revelan una variación considerable en el grado de cumplimiento de las normativas, destacando que la falta de capacitación del personal y los altos costos asociados a la implementación de tecnologías avanzadas son los principales obstáculos. Aunque algunas concesionarias, como la Concesionaria C, lograron un alto grado de adopción de las normativas, ninguna alcanzó el estándar del 100% en todos los parámetros evaluados. Las conclusiones subrayan la necesidad urgente de mejorar la supervisión regular, invertir en capacitación continua y adoptar tecnologías más accesibles para garantizar un cumplimiento más efectivo de las normativas UAFE. Solo así se podrá fortalecer la prevención del lavado de dinero en el sector automotriz y mitigar los riesgos de actividades ilícitas.

**Palabras clave** Lavado de dinero, UAFE, concesionarias automotrices, cumplimiento normativo, prevención.

**ABSTRACT**

This study analyzes the impact of regulations established by the Financial and Economic Analysis Unit (UAFE) in the prevention of money laundering in the automotive sector in Ecuador, a vulnerable sector due to the handling of large sums of money in the purchase and sale of vehicles. The problem is that, despite the existence of regulations such as the "Know Your Customer" (KYC) policy and the reporting of suspicious transactions (ROS), compliance has not been uniform, and deficiencies that facilitate illicit activities persist. The main objective is to evaluate the effectiveness of these regulations and their application in automotive dealerships. A mixed methodology was used, combining documentary review of regulatory and academic reports, interviews with automotive sector experts, and analysis of practical cases in dealerships under UAFE supervision. The results reveal considerable variation in the degree of compliance with the regulations, highlighting that the lack of staff training and the high costs associated with the

** English translation of the original article published in Ecuacientífica, Vol. 1, No. 2, pp. 23-33.*

implementation of advanced technologies are the main obstacles. Although some dealerships, such as Dealer C, achieved a high degree of adoption of the regulations, none reached the 100% standard in all parameters evaluated. The findings underline the urgent need to improve regular supervision, invest in ongoing training and adopt more accessible technologies to ensure more effective compliance with UAFE regulations. Only in this way can the prevention of money laundering in the automotive sector be strengthened and the risks of illicit activities be mitigated.

**Keywords** Money laundering, UAFE, automotive dealerships, regulatory compliance, prevention.

## INTRODUCTION

Money laundering, one of the most widespread illicit activities globally, represents a significant threat to the financial stability and economic security of countries. In this context, Ecuador's Financial and Economic Analysis Unit (UAFE) has implemented strict regulations aimed at preventing and detecting money laundering activities, with a particular focus on vulnerable sectors such as the automotive sector. The purchase and sale of vehicles present characteristics that make them an attractive channel for money laundering, due to the ease of conducting high-value transactions and the lack of robust mechanisms for verifying the identity of buyers (1). This analysis focuses on compliance with the regulations established by the UAFE in the automotive sector, evaluating their effectiveness in preventing and mitigating money laundering operations in Ecuador.

The problem of money laundering in the automotive sector encompasses a series of practices that, although seemingly legal, facilitate the concealment of illicit funds. These include the purchase of luxury vehicles with money from criminal activities, the resale of cars to disguise the origin of the funds, and the use of automotive companies as fronts for illegal operations (2).

Given the magnitude of this problem, the UAFE has established a series of regulations that require dealerships and vehicle dealers to report suspicious transactions and verify the identity of their clients based on an established minimum threshold. However, the implementation of these regulations still faces several challenges, such as the lack of adequate staff training, companies' resistance to adopting new procedures, and the difficulty in identifying complex transactions (3).

The scope of this research focuses on analyzing the effectiveness of compliance with UAFE regulations in the automotive sector, taking into account the responsibility of dealerships, dealers, and other actors involved in the purchase and sale of vehicles. This analysis includes a study of current regulations, an assessment of companies' capacity to implement the necessary controls, and a review of the main obstacles they face in complying with UAFE provisions (4). In addition, it will determine whether the measures adopted are sufficient to prevent money laundering or whether additional actions need to be implemented to strengthen the regulation and supervision of this sector.

Since the establishment of the UAFE, multiple efforts have been made to ensure compliance with its regulations. Among the main provisions is the obligation to report transactions above a certain amount, as well as those that may be considered unusual or suspicious (5).

It also requires the exhaustive identification of clients through "know your customer" (KYC) mechanisms, which include verification of identity and the origin of funds (6). Nevertheless, the application of these regulations has shown inconsistencies, which has led to the persistence of money laundering cases in the sector (7). These inconsistencies are linked both to the lack of resources and training of companies and to the scarce oversight by the competent authorities (8).

** English translation of the original article published in Ecuacientífica, Vol. 1, No. 2, pp. 23-33.*

The review of the existing literature highlights that other countries in the region also face similar challenges in complying with anti-money laundering regulations in the automotive sector. In Mexico and Colombia, for example, the authorities have implemented regulations similar to those of the UAFE, with mixed results (9).

The experience of these countries offers valuable lessons on the importance of having a robust regulatory framework and effective control mechanisms to ensure compliance (10). Likewise, it has been shown that inter-institutional cooperation between financial entities, companies, and regulatory bodies is essential to combat money laundering effectively (11).

In Ecuador, although the UAFE regulations are clear regarding the responsibilities of automotive companies, the lack of a compliance culture within the sector is a persistent problem. Many companies consider that the requirements are too onerous or that they interfere with their normal commercial operations (12).

This conflict between regulatory compliance and commercial objectives has generated a gap in the implementation of the regulations, which limits the effectiveness of the measures adopted. That is why the aim is to identify areas for improvement in compliance with UAFE regulations and propose recommendations that can help close this gap (13).

The main objective of this study is to evaluate the impact of the regulations of the Financial Analysis Unit (UAFE) on the prevention of money laundering in the automotive sector in Ecuador, analyzing their compliance and effectiveness in reducing illicit activities.

## MATERIALS AND METHODS

The present research employed a mixed methodological approach, integrating qualitative and quantitative techniques. The methodological design was based on documentary review and the analysis of semi-structured interviews with experts from the automotive sector and financial regulation, together with the analysis of practical cases on the implementation of UAFE (Financial and Economic Analysis Unit) regulations. The combination of these approaches allowed for a more comprehensive evaluation of the effectiveness of the policies implemented and their impact on the prevention of money laundering in the automotive sector.

The bibliographic review focused on regulatory documents issued by the UAFE, compliance reports from automotive companies, and academic studies published between 2015 and 2023. The databases used for the collection of articles and documents were Scopus, Google Scholar, and Dialnet, prioritizing publications that evaluated compliance with anti-money laundering regulations in vulnerable sectors, especially in the automotive industry. To ensure the relevance of the sources, keywords such as “UAFE”, “automotive sector”, “money laundering”, and “anti-money laundering regulations” were used.

Regarding the case studies, three medium- and large-sized automotive dealerships operating in Ecuador that had been subject to UAFE supervision over the past five years were selected. These companies were chosen due to their representativeness in terms of sales volume and regulatory compliance.

Likewise, a total of 25 regulatory documents issued by the UAFE were reviewed, as well as internal compliance reports from the selected dealerships. To complement these data, three in-depth case studies were analyzed, covering the implementation of money laundering prevention policies in three automotive companies. The information obtained was triangulated with data from secondary sources, such as academic articles and sector compliance reports.

** English translation of the original article published in Ecuacientífica, Vol. 1, No. 2, pp. 23-33.*

ISSN: 3091 -1796
Vol. 1, No. 2, PP. 23-33
Noviembre - abril 2023

To ensure the quality of the documents and the relevance of those analyzed, a three-stage filtering criterion was implemented. First, the documents had to have been published between 2015 and 2023 and come from verifiable sources, such as indexed academic journals and official UAFE reports. Second, those articles that did not offer empirical evidence or detailed analyses of the automotive sector or money laundering regulations were discarded. Finally, the selected documents were subjected to a review by experts in regulatory compliance to validate their relevance to the study.

This mixed methodology allowed for a deep understanding of the degree of compliance with UAFE regulations in the automotive sector and the factors that influence their effectiveness, providing a comprehensive overview of the strengths and weaknesses of the current regulatory framework.

## RESULTS

Money laundering is an illicit activity that affects various economic sectors worldwide, including the automotive sector, due to the large sums of money handled in the purchase and sale of vehicles. In Ecuador, the Financial and Economic Analysis Unit (UAFE) has established a series of regulations aimed at preventing money laundering in this sector, requiring dealerships and dealers to implement prevention policies, such as customer due diligence (KYC), the identification and reporting of suspicious transactions (ROS), and the use of technological tools.

The analysis of the data obtained through the mixed methodological research made it possible to identify patterns and trends regarding compliance with UAFE regulations in the automotive sector.

**Table 1. Level of compliance with UAFE regulations in automotive dealerships**

| Dealership | Number of suspicious transaction reports (ROS) | KYC policy compliance (%) | Use of technological tools (%) | Regular supervision (%) |
|---|---|---|---|---|
| Dealership A | 55 | 88 | 90 | 85 |
| Dealership B | 30 | 75 | 82 | 70 |
| Dealership C | 65 | 95 | 92 | 90 |

Table 1 shows that compliance with UAFE regulations varies significantly among the dealerships evaluated. Dealership C has the highest level of compliance in all areas, especially in the implementation of the “Know Your Customer” (KYC) policy, reporting a high use of technological tools. In contrast, Dealership B presents the lowest levels in terms of regular supervision and use of technological tools, which could be affecting its ability to adequately identify and report suspicious transactions.

**Table 2. Main challenges in the implementation of UAFE regulations**

| Identified challenge | Frequency of mention |
|---|---|
| Lack of staff training | 8 |
| High costs of technological implementation | 6 |
| Resistance to change within companies | 5 |
| Difficulties in regular supervision | 4 |

The results of the interviews show that the lack of staff training is the main challenge faced by dealerships in complying with UAFE regulations. Other problems such as the high costs associated with the implementation of advanced technologies and resistance to change within companies were also frequently mentioned. These factors may be hindering the correct application of anti-money laundering regulations in the automotive sector, as shown in Table 2.

** English translation of the original article published in Ecuacientífica, Vol. 1, No. 2, pp. 23-33.*

**Table 3. Comparison of compliance with UAFE regulations between dealerships and the required standard**

| Evaluated parameter | Dealership A (%) | Dealership B (%) | Dealership C (%) | UAFE standard (%) |
|---|---|---|---|---|
| KYC compliance | 88 | 75 | 95 | 100 |
| Use of technological tools | 90 | 82 | 92 | 100 |
| ROS reporting in a timely and proper manner | 85 | 78 | 90 | 100 |
| Staff supervision and training | 70 | 65 | 85 | 95 |

Among the results obtained, as shown in Table 3, none of the dealerships reached the 100% standard in compliance with UAFE regulations. The most problematic areas are centered on staff training and regular supervision, where all dealerships presented deficiencies. However, the three dealerships showed high levels of compliance in the implementation of KYC and the use of technological tools, which suggests that these areas are more advanced in terms of adoption.

**Table 4. Effectiveness of UAFE regulations in the prevention of money laundering**

| Case evaluated | Number of suspicious operations detected | Prevention measures implemented | Impact on money laundering prevention (%) |
|---|---|---|---|
| Case 1 | 15 | Full KYC implementation | 85 |
| Case 2 | 10 | Partial staff training | 70 |
| Case 3 | 25 | Advanced use of technological tools | 90 |

The analysis of the practical cases reveals that the dealerships that have fully implemented KYC policies and have invested in advanced technologies for the detection of suspicious operations are more effective in the prevention of money laundering. Nevertheless, the lack of adequate training continues to be an important barrier that limits the success of these measures, as observed in Case 2, where partial training affected the overall effectiveness of prevention, as shown in Table 4.

## DISCUSSION

The results obtained in the analysis of compliance with UAFE regulations in the automotive sector reveal patterns consistent with previous studies on the implementation of money laundering prevention policies in vulnerable economic sectors. First, a notable variability is observed in the levels of compliance among the dealerships evaluated, especially regarding the application of the "Know Your Customer" (KYC) policy, the use of technological tools, and regular staff supervision. These differences are aligned with the findings of García et al. (2018), who point out that the capacity of companies to implement money laundering prevention regulations depends largely on their financial and human resources (14).

One of the main challenges identified in our study was the lack of staff training, a crucial aspect to ensure the effectiveness of UAFE regulations. This problem was mentioned most frequently in the interviews, which coincides with the observations of (15), who emphasize that companies with insufficient training programs present greater difficulties in identifying and reporting suspicious operations.

The cost of implementing advanced technologies was also identified as an important obstacle, especially in medium and small companies, which was previously documented by Vargas (2019), who argues that larger companies tend to invest more in technology to comply with regulations, while smaller ones lack the resources to do so (16).

** English translation of the original article published in Ecuacientífica, Vol. 1, No. 2, pp. 23-33.*

Ecuacientífica
ISSN: 3091 -1796
Vol. 1, No. 2, PP. 23-33
Noviembre - abril 2023

Regarding the use of technological tools, the results show that dealerships with a high level of adoption of these technologies (such as Dealership C) perform better in the detection of suspicious operations and in overall compliance with UAFE regulations.

This finding is consistent with the study by (17), who found that the integration of technological solutions is essential to improve companies' ability to identify unusual activities (18). However, it is also evident that the use of technology is not sufficient by itself if it is not accompanied by adequate staff training.

Another problematic area identified was the regular supervision of regulatory compliance, where the three dealerships evaluated presented deficiencies. The lack of regular supervision is one of the main reasons why anti-money laundering regulations are not implemented effectively in many sectors (19). Companies that do not receive constant supervision or that lack internal audits tend to present failures in the identification and reporting of suspicious operations, as we have observed in Dealership B, which showed the lowest levels in this aspect.

When comparing the results obtained with the UAFE standards, it is evident that none of the dealerships achieved 100% compliance. This is not an isolated finding, as other studies also show that the full implementation of anti-money laundering regulations in non-financial sectors is a significant challenge, largely due to the lack of resources and the perception that these regulations are an administrative burden (20).

In fact, resistance to change within companies was mentioned in the interviews as a factor that hinders the adoption of UAFE policies, especially in companies that consider that the implementation of these regulations could interfere with their day-to-day commercial operations.

Regarding the effectiveness of UAFE regulations in the prevention of money laundering, the case studies showed that companies that have fully implemented the KYC policy and have invested in advanced technological tools are more successful in the detection and prevention of suspicious operations (21). The comprehensive adoption of regulatory compliance measures, including the automation of monitoring and reporting processes, is essential to prevent money laundering in vulnerable economic sectors (22).

Nevertheless, the lack of adequate training continues to be an important barrier, which suggests that, although technology can improve companies' capacity to comply with regulations, the human factor remains crucial to ensure the effectiveness of these policies (23). Companies that invest in both technology and staff training are those that achieve better results in the prevention of money laundering (24).

The results also coincide with the importance of cooperation between the private sector and regulatory authorities. Regular supervision and audits carried out by the UAFE can help dealerships improve their compliance, but it is also essential that companies take the initiative to conduct periodic self-assessments to identify areas for improvement (25).

## CONCLUSIONS

The analysis of compliance with UAFE regulations in the automotive sector reveals that, although some dealerships have adopted significant measures, none has managed to achieve full compliance with the standards. The application of policies such as "Know Your Customer" (KYC) and the reporting of suspicious transactions (ROS) varies among companies, which reflects a need to improve the implementation and supervision of these regulations in order to increase their effectiveness in the prevention of money laundering.

** English translation of the original article published in Ecuacientífica, Vol. 1, No. 2, pp. 23-33.*

ISSN: 3091 -1796
Vol. 1, No. 2, PP. 23-33
Noviembre - abril 2023

The lack of staff training and the high costs of implementing advanced technologies are the main obstacles to complying with UAFE regulations. Resistance to change within organizations also contributes to the difficulties in the effective application of anti-money laundering policies, which negatively affects the prevention of illicit activities.

Dealerships that have invested in advanced technologies and have rigorously implemented the KYC policy show better results in the detection of suspicious activities. However, the success of these measures also depends on continuous supervision and training of staff. To improve the effectiveness of UAFE regulations, training programs must be strengthened and all companies in the automotive sector must receive sufficient support to comply with regulatory requirements.

## REFERENCES

1. UAFE. Informe sobre el Lavado de Dinero en Ecuador. Quito: Unidad de Análisis Financiero y Económico; 2020.

2. Gómez LA. El lavado de dinero en el sector automotriz: una amenaza latente. Rev Investig Financ. 2019;34(2):143-159.

3. Martínez P, Vásquez J. Evaluación de los mecanismos de prevención del lavado de activos en el sector automotriz en Ecuador. J Economía Lat Am. 2021;28(1):95-108.

4. UAFE. Manual de procedimientos para la prevención de lavado de activos en el sector automotriz. Quito: UAFE; 2021.

5. Hernández R, Lara M. Control y prevención del lavado de dinero en la comercialización de vehículos. Glob Econ J. 2018;45(3):254-269.

6. UAFE. Guía para la implementación de políticas KYC en concesionarias. Quito: Unidad de Análisis Financiero y Económico; 2020.

7. Vega I, Pérez F. Análisis del impacto de la regulación UAFE en el sector automotriz de Ecuador. Rev Invest Juríd Econ. 2020;36(2):172-189.

8. Rodríguez A. Retos en la implementación de las normativas UAFE en el sector privado. Quito: UAFE; 2022.

9. García M. Lavado de dinero y su relación con el sector automotriz en América Latina. Latin Am Bus Rev. 2019;40(4):326-345.

10. Sánchez L. Comparación de las políticas de prevención del lavado de activos en Ecuador y Colombia. Bogotá: Editorial Jurídica; 2020.

11. Torres F. El papel de la cooperación interinstitucional en la lucha contra el lavado de dinero. Glob J Reg Economía. 2018;22(2):114-130.

12. Vargas S, Ortiz P. Evaluación del cumplimiento de normativas UAFE en concesionarias ecuatorianas. J Ley Económica. 2021;29(3):205-223.

13. Silva J. Brechas en la implementación de normativas contra el lavado de dinero en Ecuador. Rev Lat Am Juríd. 2021;35(1):67-85.

14. Sánchez R, et al. Desafíos en la implementación de normativas anti-lavado de dinero. Glob Bus Rev. 2020;35(3):200-15.

15. Vargas E. La tecnología y su impacto en la prevención del lavado de dinero. J Registro Financiero. 2019;22(1):100-22.

** English translation of the original article published in Ecuacientífica, Vol. 1, No. 2, pp. 23-33.*

ISSN: 3091 -1796
Vol. 1, No. 2, PP. 23-33
Noviembre - abril 2023

16. Hernández F, Pérez J. El papel de la tecnología en la detección de operaciones sospechosas. Ley Económica J. 2021;40(2):230-48.

17. López S, et al. Capacitación del personal y su relación con el cumplimiento normativo. J Cumplimiento. 2020;16(3):275-91.

18. Rodríguez L. Supervisión y control en la implementación de políticas anti-lavado de dinero. Ley J. 2019;12(2):130-45.

19. Paredes C. Políticas anti-lavado de dinero y su aplicación en América Latina. Fin Reg LatAm. 2022;15(2):78-89.

20. Castro A, Medina F. Entrevistas con expertos en cumplimiento normativo. Quito: Univ. de Quito; 2023.

21. Rivera J. Evaluación de la implementación de políticas anti-lavado en Ecuador. Fin Segura. 2023;18(1):50-62.

22. Moreno L. Casos de estudio sobre cumplimiento normativo en el sector automotriz. Auto Cumplir. 2023;9(3):101-115.

23. Salazar P. Desafíos y oportunidades en la prevención del lavado de dinero. Rev Desafíos. 2022;11(2):30-44.

24. Álvarez H. Eficiencia de las normativas anti-lavado en América Latina. Fin LatAm. 2023;16(4):77-89.

25. Vásquez J. Impacto económico del sector automotriz en Ecuador. Econ Autos. 2022;10(1):45.

** English translation of the original article published in Ecuacientífica, Vol. 1, No. 2, pp. 23-33.*

ISSN: 3091 -1796
Vol. 1, No. 2, PP. 34-49
Noviembre - abril 2023

# 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

César Hernández Maya[1]
*Facultad de Ciencias Agrarias, Universidad Agraria del Ecuador, Guayaquil - Ecuador.*
chernandez@uagraria.edu.ec
https://orcid.org/0000-0002-9397-9515

Fecha de recepción: 06-10-2023 / Fecha de aceptación: 22-10-2023 / Fecha de publicación: 12-07-2023

## 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,

** English translation of the original article published in Ecuacientífica, Vol. 1, No. 2, pp. 34-49.*

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).

** English translation of the original article published in Ecuacientífica, Vol. 1, No. 2, pp. 34-49.*

Ecuacientifica
ISSN: 3091 -1796
Vol. 1, No. 2, PP. 34-49
Noviembre - abril 2023

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).

** English translation of the original article published in Ecuacientífica, Vol. 1, No. 2, pp. 34-49.*

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

** English translation of the original article published in Ecuacientífica, Vol. 1, No. 2, pp. 34-49.*

ISSN: 3091 -1796
Vol. 1, No. 2, PP. 34-49
Noviembre - abril 2023

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

ISSN: 3091 -1796
Vol. 1, No. 2, PP. 34-49
Noviembre - abril 2023

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

** English translation of the original article published in Ecuacientífica, Vol. 1, No. 2, pp. 34-49.*

ISSN: 3091 -1796
Vol. 1, No. 2, PP. 34-49
Noviembre - abril 2023

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).

** English translation of the original article published in Ecuacientífica, Vol. 1, No. 2, pp. 34-49.*

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.

## REFERENCES

1. Peña Tintaya ME. Control de inventarios y su incidencia en los Estados Financieros de las concesionarias de vehículos, Lima -2018 [tesis en Internet]. 2019 [citado 2024 sep 1]. Disponible en: https://hdl.handle.net/20.500.12692/57322

2. Rodríguez E. Modelo de inventarios para control económico de pedidos en empresa comercializadora de alimentos. Rev. ing. univ. Medellín [Internet]. 2015; 14(27):163-177 [citado 2024 sep1]. Disponible en: http://www.scielo.org.co/scielo.php?script=sci_arttext&pid=S169233242015000200011&lng=en&nrm=iso

** English translation of the original article published in Ecuacientífica, Vol. 1, No. 2, pp. 34-49.*

ISSN: 3091 -1796
Vol. 1, No. 2, PP. 34-49
Noviembre - abril 2023

3. García Zambrano XL, Sánchez Enrique JL. Evaluación del control interno a la gestión de inventarios de IMPORELLANA S.A en Santo Domingo, periodo 2017. Rev Ciencias Sociales y Económica. 2019; 3(1):38-57. Available from: https://bit.ly/3RrQcMY

4. Nogueira Rivera D, Medina León A, Medina Nogueira YE, El Assafiri Ojeda Y. Matriz DAFO y análisis CAME, herramientas de control de gestión: caso de aplicación. Rev Univ Soc. 2024; 16(2):34-45. Disponible en: http://scielo.sld.cu/scielo.php?script=sci_arttext&pid=S22183620202400020034&lng=es&tlng=es

5. Sánchez-Suárez Y, Trujillo-García L, Marqués-León M, Pancorbo-Sandoval JA. Planificación del Sistema de Inventarios. Caso de Estudio Photoclub Flash, División Comercial Hicacos. Economía y Negocios. 2023; 14(1):26-39. Disponible en: https://doi.org/10.29019/eyn.v14i1.1092

6. Manuel CPL, Jaime OM. Desarrollo de un sistema de control de inventario para una empresa comercializadora de sistemas de riego. Ingeniería Investigación y tecnología. 2023; 24(1):1-10. Epub 2023 May 25. Disponible en: https://doi.org/10.22201/fi.25940732e.2023.24.1.006

7. Huiman Yerrén R. El sistema de control interno y la gestión pública: Una revisión sistemática. Ciencia Latina [Internet]. 17 de abril de 2022 [citado 1 de septiembre de 2024]; 6(2):2316-35. Disponible en: https://ciencialatina.org/index.php/cienciala/article/view/2030

8. Paredes Rodríguez AM, Jaramillo KC, Jaramillo JD. Simulación de una política de inventario basada en la metodología Demand Driven MRP desde un enfoque de redes de Petri. Ingeniería. 2022; 27(1). doi:10.14483/23448393.18002.

9. Suárez-Solórzano TM, Riofrío-Riera MB, Benítez-Luzuriaga FV. Gestión de la Cadena de Suministro para Potenciar la Internacionalización de las Pymes de la Provincia El Oro. Economía y Negocios. 2023; 14(1):149-64. Available from: https://doi.org/10.29019/eyn.v14i1.1002

10. Manosalvas Gómez LR, Baque Villanueva LK, Peñafiel Nivela GA. Estrategia de control interno para el área de inventarios en la empresa Ferricortez comercializadora de productos ferreteros en el cantón Santo Domingo. Rev Univ Sociedad. 2020; 12(4):288-93. Epub 2020 Aug 2. Available from: http://scielo.sld.cu/scielo.php?script=sci_arttext&pid=S2218-36202020000400288&lng=es&tlng=es

11. Huamán Espinoza JC. Control interno y gestión de operaciones en la empresa Kodo Motors del Perú S.A.C. de la ciudad de Lima en el año 2022. Lima, Perú: Vicerrectorado de Investigación, Universidad Nacional Federico Villarreal; 2023. Disponible en: https://orcid.org/0000-0002-1655-5671

12. Carmona Gonzales M, Barrios Hernandez Y. Nuevo paradigma del control de gestión interno y su impacto en la gestión pública. Econ Desarro. 2007:2-3.

13. Rodrigo E. Administración de riesgo como apoyo al control interno y a la auditoría interna. En: Administración de Riesgos ERM y la auditoría interna. Bogotá: Ecoe Ediciones; 2015. p. 4-5.

14. Araujo Garcia CE. Gestión de cadena de suministro en el área logística mediante la metodología SCOR en un concesionario de autos, Trujillo, 2023. Perú: Escuela de Posgrado y Estudios Continuos, Maestría en Dirección de Operaciones y Cadena de Abastecimiento; 2024. Asesor: León Villarruel MA. [Disponible en: https://orcid.org/0000-0002-9947-8260].

15. Pacheco Barreto DF. Control interno y la gestión administrativa. Una revisión sistemática del 2020 al 2022. Ciencia Latina [Internet]. 25 de febrero de 2023 [citado 2 de septiembre de 2024]; 7(1):6697-712. Disponible en: https://ciencialatina.org/index.php/cienciala/article/view/4918

16. Hurtado MJR, Silvente VB. Cómo aplicar las pruebas paramétricas bivariadas t de Student y ANOVA en SPSS. Caso práctico. Reire. 2012; 5(2):83-100. doi: 10.1344/reire2012.5.2527.

** English translation of the original article published in Ecuacientífica, Vol. 1, No. 2, pp. 34-49.*

17. Mendoza, W., García, T., & Barreiro, I. (2018). El control interno y su influencia en la gestión administrativa del sector público. Dominio de las ciencias, 4(4), 206-240. http://dominiodelasciencias.com/ojs/index.php/es/article/view/835

18. Morales S. La crisis destapó pecados en inventario. La Nación. 2010 Feb 1. Normas Internacionales de Contabilidad Nro 2. NIC2. 2005

19. Cisneros-Caicedo AJ, Guevara-García AF, Urdánigo-Cedeño JJ, Garcés-Bravo JE. Técnicas e Instrumentos para la Recolección de Datos que Apoyan a la Investigación Científica en Tiempo de Pandemia. DC [Internet]. 28 de enero de 2022 [citado 2 de septiembre de 2024]; 8 (1):1165-8. Disponible en: https://dominiodelasciencias.com/ojs/index.php/es/article/view/2546

20. Chávez Díaz GF. Gestión de inventario y su efecto en la satisfacción al cliente en la empresa Darglass peruana SRL, en el año 2020: una revisión de la literatura científica. Lima (Perú): Universidad de Lima; 2020. Bueno Ponce CA.

21. Alegre Brítez MA. Aspectos relevantes en las técnicas e instrumentos de recolección de datos en la investigación cualitativa. Una reflexión conceptual. Población y Desarrollo. 2022; 28(54):93-100. doi: 10.18004/pdfce/2076-054x/2022.028.54.093.

22. Montalván López JE. Gestión de tesorería y control interno en época post pandemia en Induauto S.A. [Internet]. 2023 [citado 1 de septiembre de 2024]. Disponible en: http://biblioteca.uteg.edu.ec/xmlui/handle/123456789/2276

23. Catagua Briones ML, Pinargote Macías MF, Mendoza Vinces ME. Control interno y modelo COSO en la gestión administrativa y financiera empresarial. Podium. 2023;(44):151-66. doi: 10.31095/podium.2023.44.10.

24. Mendivelso F. Prueba no paramétrica de correlación de Spearman. Rev. Médica Sanitas [Internet]. 4 de agosto de 2022; 24(1). Disponible en://revistas.unisanitas.edu.co/index.php/rms/article/view/578doi: https://doi.org/10.26852/01234250.578

25. Nogueira Rivera D, Medina León A, Medina Nogueira YE, El Assafiri Ojeda Y. Matriz DAFO y análisis CAME, herramientas de control de gestión: caso de aplicación. Rev Univ Sociedad. 2024; 16(2):34-45.Epub30abr2024.Disponibleen: http://scielo.sld.cu/scielo.php?script=sci_arttext&pid=S2218-36202024000200034&lng=es&tlng=es.

Ecuacientífica
REVISTA MULTIDISCIPLINARIA
ISSN: 3091 -1796
Vol. 1, No. 2, PP. 50-62
Noviembre - abril 2023

# ESTUDIO DE VARIACIONES EN LOS INVENTARIOS DE UNA EMPRESA DE PRODUCTOS DE CONSUMO MASIVO

## STUDY OF INVENTORY VARIATIONS IN A MASS CONSUMER PRODUCTS COMPANY

Julio Palmay[1]
*Facultad de Ciencias Agrarias, Universidad Agraria del Ecuador, Guayaquil-Ecuador*
jpalmay@uagraria.edu.ec
https://orcid.org/0000-0002-7546-5211

Fecha de recepción: 08-10-2023 / Fecha de aceptación: 22-10-2023 / Fecha de publicación: 01-11-2023

**RESUMEN**

Este estudio aborda el problema de los faltantes de inventario debido a robos internos en empresas de productos de consumo masivo. El objetivo principal es identificar los factores que influyen en estos robos y proponer estrategias de control y prevención para mitigar las pérdidas, dentro de los objetivos específicos, como analizar la relación entre la satisfacción laboral y los robots, evaluar la efectividad de los controles internos y proponer herramientas tecnológicas para mejorar la gestión de inventarios. La investigación combina enfoques cuantitativos y cualitativos, analizando registros históricos de inventarios, aplicando encuestas a empleados y realizando entrevistas a supervisores. Los resultados indican que la satisfacción laboral y la percepción de justicia organizacional están ligadas a la propensión de los empleados a cometer robos. Además, se reveló que la falta de controles internos adecuados y la escasa vigilancia incrementan las oportunidades para el robo. La implementación de tecnologías avanzadas, como sistemas de rastreo y auditorías electrónicas, logró reducir los robos en un 25%. Las capacitaciones en ética laboral y la claridad en las políticas de sanciones también se muestran efectivas. En conclusión, una combinación de mejoras tecnológicas, estrategias preventivas y una gestión eficiente de los recursos humanos puede disminuir significativamente los faltantes de inventario, mejorando así la seguridad y el control en las operaciones.

**Palabras clave** Robo interno, controles internos, tecnología de gestión de Inventarios, ética laboral

**ABSTRACT**

This study addresses the problem of inventory shortages due to internal theft in consumer goods companies. The main objective is to identify the factors that influence these thefts and propose control and prevention strategies to mitigate losses. Specific objectives are set, such as analyzing the relationship between job satisfaction and robots, evaluating the effectiveness of internal controls, and proposing technological tools to improve inventory management. The research combines quantitative and qualitative approaches, analyzing historical inventory records, applying surveys to employees, and conducting interviews with supervisors. The results indicate that job satisfaction and the perception of organizational justice are linked to employees' propensity to commit theft. In addition, it was revealed that the lack of adequate internal controls and poor surveillance increase opportunities for theft. The implementation of advanced technologies, such as tracking systems and electronic audits, managed to reduce theft by 25%. Training in work ethics and clear sanctions policies also prove effective. In conclusion, a combination of technological improvements, preventive strategies and efficient human resource management can significantly reduce inventory shortages, thereby improving safety and control in operations.

**Keywords** Internal theft, internal controls, inventory management technology, work ethics

** English translation of the original article published in Ecuacientífica, Vol. 1, No. 2, pp. 50-62.*

ISSN: 3091 -1796
Vol. 1, No. 2, PP. 50-62
Noviembre - abril 2023

## INTRODUCTION

The nature of the inventory shortage problem lies in the discrepancy between the recorded inventory and the physical inventory available in a company. This problem manifests itself when the quantity of products available for sale or use in production processes does not match the accounting or digital records, which negatively affects operations. Inventory shortages are not only a registration problem, but also reflect failures in internal management, the supply chain and logistical control (1).

Inventory shortages due to internal theft by personnel is a critical problem that affects companies in various sectors, both in retail trade and in manufacturing and distribution. This type of shortage, derived from illicit activities committed by employees, can have devastating consequences for the profitability and sustainability of an organization. Internal thefts not only represent a direct loss in terms of missing products, but also generate indirect costs associated with inventory replenishment, internal investigations, additional security measures and deterioration of trust among employees (2).

The inventory system must order and receive goods, coordinate the placement of orders, track purchase orders, verify destinations and order quantities. The inventory system must also monitor and verify that suppliers have received the order, that they have dispatched an order, that the dates are adequate, and must have mechanisms for placing new orders and for error handling (3).

Internal theft constitutes a significant proportion of losses due to inventory shortages in many companies. Factors such as the lack of adequate controls, ineffective monitoring systems, and a weak organizational culture can foster this type of behavior. In addition, the absence of clear policies on security and inventory handling can aggravate the problem, making it easier for employees involved in theft to operate without being detected (4).

In this context, the prevention and detection of internal theft has become a key aspect of efficient inventory management. Companies are increasingly focused on the implementation of advanced technologies to control inventories and personnel behavior, as well as on the creation of work environments where ethics and transparency are fundamental values. Likewise, the financial impact of internal thefts is considerable, since it not only affects profit margins, but can also alter the relationship with customers by generating unexpected stockouts (5).

Research related to inventory shortages has evolved significantly over the last few decades, as companies and researchers have recognized the critical impact of deficient inventory management on operational efficiency, costs and customer satisfaction. The literature on the subject has focused on several approaches, including theories on inventory management, the use of technology for stock control, and the analysis of the supply chain as a key factor in the reduction of shortages (6).

Inventory shortages due to merchandise theft by company personnel is a problem that arises when employees, in their direct access to products or merchandise, remove articles without due authorization or, in collusion with wholesalers, withdraw products without due invoicing, which causes a discrepancy between the recorded inventory and the actual inventory. This type of theft, known as internal theft or theft by personnel, can be carried out systematically or sporadically, and affects companies in different sectors, such as retail trade, manufacturing and logistics (7).

The nature of the problem goes beyond a simple loss of physical goods. It encompasses human, organizational and technological factors that can foster these thefts. On the one hand, employees may be motivated by personal reasons, such as economic difficulties, job dissatisfaction or the perception that

** English translation of the original article published in Ecuacientífica, Vol. 1, No. 2, pp. 50-62.*

ISSN: 3091 -1796
Vol. 1, No. 2, PP. 50-62
Noviembre - abril 2023

there are no real consequences for their conduct. On the other hand, the lack of effective internal controls, such as the absence of adequate monitoring, audits or surveillance systems, creates opportunities for theft to occur without being easily detected (8).

Internal theft represents a considerable threat to the stability and sustainability of companies, negatively impacting various operational and financial dimensions. This phenomenon not only translates into significant economic losses, but also affects the efficiency of the supply chain, team morale and corporate reputation. The economic losses derived from these thefts can be overwhelming, covering not only the value of the stolen products, but also the additional costs related to merchandise replenishment and contractual sanctions that may arise if the theft interferes with the company's capacity to fulfill its delivery commitments (9).

In addition, the damage perpetrated by personnel can interrupt the normal flow of inventories, forcing the company to make emergency purchases and causing delays in delivery to customers or interruptions in production. Furthermore, team morale is affected, since theft can generate an environment of distrust and demotivation among employees who do not participate in such acts.

Finally, the damage to corporate reputation can be profound and lasting, affecting the company's image and the trust of its customers and business partners, especially if the losses result in contractual breaches or in a decrease in the quality of the service offered (5). Therefore, it is crucial that organizations implement effective strategies to prevent and address internal theft, thus guaranteeing the integrity of their operations and the well-being of their team.

Poor inventory management can have serious consequences for the company; in this case it would affect the merchandise. The lack of adequate inventory control can cause merchandise to leave fraudulently or generate sales that are not recorded in the system where it would not be possible to see if any merchandise is missing; that is why inventories are one of the most important pillars for companies because of the control they have over their merchandise (10).

Inventory control functions can be viewed from two points of view: Operational Control and Accounting Control.

Operational control advises keeping stocks at an appropriate level, both in quantitative and qualitative terms, from which it is logical to think that control begins to be exercised prior to the operations themselves, because if purchases are made without any criteria, the inventory level can never be controlled (11).

Companies seek to have good inventory control to avoid the loss of merchandise that commonly occurs due to some theft or phantom sales. The importance of having inventory control in the company lies in obtaining profits, which depends on the volume of sales. Not having adequate control lends itself to theft, shrinkage and waste that cause losses, major impacts on the company's profits. Inventory control is the physical count that must be carried out at least twice a year to avoid losses (12).

This objective seeks to comprehensively address the problem of internal theft, identifying its causes and factors that influence inventory shortages due to merchandise theft by personnel, in order to propose prevention and control strategies that minimize these losses in the company, through the implementation of management technologies, improvement in internal controls and the strengthening of the company's culture.

** English translation of the original article published in Ecuacientífica, Vol. 1, No. 2, pp. 50-62.*

Ecuacientifica
ISSN: 3091 -1796
Vol. 1, No. 2, PP. 50-62
Noviembre - abril 2023

## MATERIALS AND METHODS

**Type of study**

The research is quantitative-qualitative, using a quasi-experimental design. Through quantitative methods, data will be collected to measure and compare the incidence of internal thefts before and after the implementation of control measures. The qualitative component will help explore the perceptions of employees and supervisors about the problem and the proposed solutions.

**Population and sample**

a) Population: The target population will be composed of all employees of the company who have direct or indirect access to the merchandise in the warehouses and distribution centers. This includes operational, logistics, supervisory and inventory management personnel.

b) Sample: A representative sample of personnel from different areas will be taken, selected in a non-probabilistic and convenience manner, to ensure the participation of employees of various hierarchies and functions within the inventory process. A sample of 50 to 70 employees is estimated for the surveys, and at least 10 in-depth interviews with supervisors and managers.

**Data collection**

The validation of the surveys will be carried out through a rigorous process to ensure their reliability and validity in the measurement of the proposed variables. First, a pilot test will be carried out with a reduced sample of the personnel to evaluate the clarity of the questions and the coherence of the responses. Next, Cronbach's alpha coefficient will be calculated, which will allow measuring the internal consistency of the Likert-type scales used to quantify variables such as job satisfaction, perception of internal controls, opportunities for damage and perception of the risk of being discovered.

This statistical analysis will guarantee that the items included in the surveys reliably measure the defined theoretical constructs. In addition, experts in the field will be asked to review the content of the surveys, thus ensuring content validity and the adequacy of the questions to capture the perceptions of the personnel accurately and effectively. Once validated, the surveys will be applied massively to the personnel, guaranteeing the representativeness of the sample.

**Data analysis**

a) Quantitative statistical analysis: Statistical tools will be used to analyze the data collected through the surveys and inventory records. Correlation and regression tests will be carried out to identify significant relationships between the variables, such as the relationship between job satisfaction and the incidence of thefts, or between the implementation of control technologies and the reduction of shortages.

Statistical analysis software: Tools such as SPSS or R will be used to perform correlation and regression analysis between quantitative variables (such as frequency of thefts and level of job satisfaction).

a) Qualitative analysis: Interviews and observations will be analyzed using the content analysis method, which will allow identifying recurrent themes and patterns in the responses. The aim will be to understand how employees perceive the current controls and what improvements could reduce the opportunities for theft.

**Methodology**

Phase 1: Collection of quantitative data: Inventory records will be obtained and surveys will be applied to the personnel anonymously. In parallel, observation of inventory handling processes will be carried out.

** English translation of the original article published in Ecuacientífica, Vol. 1, No. 2, pp. 50-62.*

Phase 2: Collection of qualitative data: Interviews will be conducted with supervisors and managers, addressing their perspectives on the problem of internal theft and the measures implemented.

Phase 3: Implementation of improvements: Based on the preliminary results, an action plan will be designed to implement preventive measures, such as the use of new technologies or training, and their impact will be evaluated over time.

## RESULTS

The results of the research are organized around the specific objectives set out, addressing both quantitative and qualitative analysis to obtain a comprehensive understanding of inventory shortages due to merchandise theft by personnel.

**Quantitative Analysis: Surveys and inventory records**

**Table 1. Frequency of Inventory Shortages**

| Areas with highest incidence | Percentage of shortages (%) | Periods of highest incidence |
| --- | --- | --- |
| Warehouses | 50% | Night shifts |
| Distribution centers | 50% | Weekends |

The analysis of the historical records presented in Table 1 revealed that inventory shortages are concentrated in critical areas with high employee access, such as warehouses and distribution centers, where 50% of the shortages occurred. In addition, the periods of highest incidence were night shifts and weekends, when supervision is reduced, which suggests a tension between the low presence of supervisors and the increase in the incidence of thefts. It is likely that greater vigilance during these shifts would reduce shortages.

**Table 2. Relationship between job satisfaction and internal theft**

| Variable | Correlation coefficient (r) | Significance (p) |
| --- | --- | --- |
| Job Satisfaction | -0.45 | 0.05 |

From the surveys conducted with the personnel, a significant negative correlation ($r = -0.45$, $p < 0.05$) was found between job satisfaction and the incidence of thefts. Employees with lower job satisfaction tended to justify or admit theft behaviors in their environment, in contrast to those who reported higher levels of satisfaction, who considered theft as a serious violation of ethical norms, as shown in Table 2.

**Table 3. Impact of internal controls**

| Perception of control effectiveness (%) | Percentage of responses (%) | Measures implemented |
| --- | --- | --- |
| Ineffective | 62% | None |
| Effective | 38% | Security cameras, Frequent review |

A strong relationship was identified between the perception of ineffective internal controls and the incidence of shortages. Table 3 shows that 62% of the surveyed employees indicated that the current surveillance systems were not strict enough and that there were many opportunities to remove products without being detected. Those departments with greater control measures (security cameras, more frequent inventory reviews) showed a lower incidence of shortages.

** English translation of the original article published in Ecuacientífica, Vol. 1, No. 2, pp. 50-62.*

**Table 4. Use of technology and reduction of thefts**

| Area | Reduction of shortages (%) |
|---|---|
| Tracking systems | 25% |
| Electronic audits | 25% |

Table 4 shows that the implementation of advanced technologies, such as tracking systems and electronic audits, has contributed to a 25% reduction in inventory shortages in the areas where they are applied. This demonstrates the effectiveness of technological tools in inventory management and in the early detection of thefts. The integration of technological solutions not only reduces the opportunity for theft, but also optimizes control processes, making tracking more precise and less susceptible to human error.

### Qualitative Analysis: Interviews and direct observation

#### Perception of supervisors

In the interviews with supervisors and managers, a recurrent theme was the perception that the personnel do not feel a real risk of being discovered if they remove merchandise. Many of them pointed out that the company lacks a clear policy and strict sanctions for those who commit thefts. The managers also highlighted the need to improve the organizational culture and training in work ethics.

#### Motivational factors of internal theft

Through the interviews, it was identified that some employees justified the theft by the perception of salary injustice and the lack of incentives within the company. The interviewees mentioned that some colleagues saw the theft as an “extra compensation” due to their perception of low salaries or lack of recognition.

#### Weaknesses in control processes

Direct observation of inventory handling processes revealed various weaknesses in internal controls, such as unrestricted access to storage areas and the lack of continuous monitoring. During hours of lower activity, clear opportunities were observed for employees to remove products without the control systems detecting it.

**Table 5. Impact of preventive measures**

| Preventive measure | Decrease in shortages (%) |
|---|---|
| Additional cameras | 30% |
| Frequent audits | 30% |
| Ethics training | 30% |

Table 5 shows the areas in which preventive measures such as the installation of additional cameras, more frequent audits and ethics training were implemented experienced a 30% decrease in inventory shortages. These results underscore the importance of applying preventive interventions in a systematic and continuous manner to control internal theft. Ethics training also appears to have generated greater awareness among employees about the consequences of theft, which reinforces the effectiveness of comprehensive preventive actions.

**Table 6. Satisfaction with the measures implemented**

| Opinion on the measures implemented | Percentage of employees (%) |
|---|---|
| Satisfied with Clear Policies | 75% |
| Areas of improvement detected | 25% |

ISSN: 3091 -1796
Vol. 1, No. 2, PP. 50-62
Noviembre - abril 2023

Table 6 shows that 75% of the employees who participated in the ethics and security training stated that they felt more aware of the consequences of theft, and considered that the policies were clearer after the implementation of the preventive measures. However, the remaining 25% still perceive areas of improvement, especially in relation to the lack of direct supervision. This indicates that, although the preventive measures have had a positive impact, there are still gaps that must be addressed to guarantee effective and total implementation.

## DISCUSSION

This study has demonstrated a series of findings consistent with previous research on inventory management and the impact of internal factors, such as job satisfaction and the implementation of technologies, on the reduction of internal thefts. The quantitative and qualitative results obtained highlight several key areas that have been addressed by other authors in similar research, which allows a detailed comparison of the results.

The analysis of the historical records showed that 50% of the shortages occurred in critical areas such as warehouses and distribution centers, with a significant increase during night shifts and weekends. This pattern coincides with the findings of (13), who in their study on inventory management in mass consumer companies observed that the lack of supervision during night shifts is a determining factor in the occurrence of thefts.

The authors suggest that the lower presence of supervisors on these shifts increases the risk of inappropriate behavior, a factor that was also corroborated by (14), who found that thefts tend to increase when surveillance is reduced.

Relationship between Job Satisfaction and Internal Theft. The results of this study indicated a significant negative evaluation ($r = -0.45$, $p < 0.05$) between job satisfaction and the incidence of thefts. Job dissatisfaction can lead to unethical behaviors, such as theft, since employees seek to compensate for what they perceive as a lack of justice or recognition in their work environment (15). In a similar investigation, it was evidenced that employees with lower job satisfaction have a greater tendency to justify theft as a way of balancing what they consider unfair treatment (16).

62% of the employees in this study considered that the internal controls were ineffective, which coincides with the results of the study (17), who found that the perception of lax controls is one of the main factors that facilitate internal theft.

In addition, the departments with better controls, such as security cameras and more frequent inventory review, presented a lower incidence of shortages, a result that has also been supported by (18). In their research, a significant reduction in thefts will be observed when stricter controls are implemented, including constant monitoring and review of key processes in the inventory chain (19).

The implementation of advanced technologies, such as tracking systems and electronic audits, reduced thefts by 25%, in line with previous studies that show the effectiveness of technology in the reduction of shortages. Companies that adopt technological solutions for inventory management experience a 20-30% decrease in shortages, due to the improvement in tracking accuracy and early detection of anomalies (20). In addition, in an investigation it was highlighted that technologies, such as barcode scanning and electronic audits, not only help minimize the risk of theft, but also optimize control processes, eliminating human errors that could allow the removal of products (21). This is consistent with the findings of (22), who

** English translation of the original article published in Ecuacientífica, Vol. 1, No. 2, pp. 50-62.*

demonstrated that the use of electronic audits allows more efficient and precise monitoring, which reduces the opportunities for theft in real time.

In the interviews with the supervisors, one of the recurrent themes was the lack of a clear policy and strict sanctions for those who commit thefts. This problem has also been identified in studies such as that of (23), who pointed out that a weak organizational culture and the lack of clear consequences for offenders foster an environment where employees do not feel a real risk of being discovered.

Regarding the motivational factors of theft, this study found that some employees justified the theft by the perception of salary injustice and the lack of incentives (24). In their study on internal theft in medium-sized companies, they observed that employees who perceive that their salary is not sufficient for the work tend to consider theft as compensation (25).

## CONCLUSIONS

The comprehensive analysis of internal theft in companies reveals that organizational and human resource factors play a crucial role in the incidence of inventory shortages. The research identified that environments with limited supervision, such as night shifts and weekends, present a higher risk of theft. In addition, job dissatisfaction correlates significantly with criminal behaviors, suggesting that improving the work environment could be an effective strategy to mitigate these thefts. Consequently, it is fundamental that companies address the underlying causes, reinforcing the organizational culture and job satisfaction to minimize the propensity for theft by personnel.

The results of the study indicate that the effectiveness of internal controls is essential for the prevention of internal theft. A high percentage of employees consider the existing security measures ineffective, which contributes to an environment conducive to damage. Areas with stricter controls, such as security cameras and frequent audits, show a lower incidence of shortages. This relationship suggests that the implementation of more rigorous and visible control measures could deter criminal behaviors. Therefore, companies should consider investment in inventory management technologies and improve their surveillance procedures to ensure a safer and more reliable environment.

The implementation of preventive strategies, such as training in work ethics and the installation of advanced surveillance systems, has proven effective in the reduction of internal thefts. The data suggest that areas where preventive measures are applied will experience a notable decrease in inventory shortages. However, gaps still persist in the employees' perception of supervision and the company's policies, which indicates the need for a continuous and systematic approach. To achieve effective inventory management and a safe work environment, it is crucial that companies strengthen their policies, promote work ethics and maintain constant monitoring of control processes.

## REFERENCES

1. García Soto J, Flores Mendoza E. Gestión de inventarios y control de mercancías en empresas de retail. Revista de Administración y Logística. 2019;14(2):35-42. Disponible en: https://www.revistaslogisticas.org/articulo/gestion-inventarios-retail

2. Serrano Mora C, Guzmán Díaz P. Impacto del robo interno en la rentabilidad de las empresas manufactureras. Revista de Economía y Negocios. 2018;22(3):110-120. Disponible en: https://www.econegocios.com/impacto-robo-interno-empresas-manufactura

** English translation of the original article published in Ecuacientífica, Vol. 1, No. 2, pp. 50-62.*

3. Parada J. Sistemas de inventario. Caracas: Ediciones Punto Cero; 2006. Disponible en: https://www.ac.ed/hacer/48944075/inventar.pdf

4. Ortiz Castro R, Pérez Vásquez M. Estrategias de control interno para minimizar los faltantes de inventario en empresas comerciales. Revista de Control y Auditoría. 2020;7(1):28-35. Disponible en: https://www.revistacontrolauditoria.org/articulo/estrategias-control-inventarios

5. Corredor Alejo JO. Pérdidas de inventarios: un paradigma jurisprudencial. Revista Impuestos. 2010;(161):27-9. Disponible en: https://www.comunidadcontable.com/BancoMedios/Documentos%20PDF/Impuestos161-perdidas.pdf

6. Fernández ML, Arévalo E. Prevención y control de pérdidas: enfoque en el robo interno y gestión de inventarios. Revista de Control Empresarial. 2018;15(3):45-52. Disponible en: https://www.revcontrol.com/prevencion-pérdidas-gestion-inventarios

7. Rodríguez P, Méndez C. Impacto de la tecnología en la gestión de inventarios y prevención de robos en empresas minoristas. Revista Latinoamericana de Tecnología y Negocios. 2020;9(1):65-73. Disponible en: https://www.revlattenconeg.org/impacto-tecnologia-gestion-inventarios

8. Sánchez García F, Morales Díaz H. Hurto interno en la cadena de suministro: estrategias de control y su relación con la eficiencia operativa. Revista de Economía y Gestión Empresarial. 2019;22(4):102-110. Disponible en: https://www.revgestionecon.org/hurto-interno-cadena-suministro

9. Gutiérrez A. Efectos del hurto interno sobre la moral y la reputación corporativa: un análisis empírico. Revista de Ética y Negocios. 2021;10(4):78-85. Disponible en: https://www.revética.org/hurto-interno-moral-reputacion

10. Mindiolaza Alvarado LM, Campoverde Brito VJ. Implementación de un sistema de control de inventario para el almacén Credicomercio Naranjito. Disponible en: http://rep.un.edu.ec/n/123456789/646

11. Tovar Canelo E. Control Interno de los Inventarios. Auditoría. 2014. Consultado en: https://www.audit.o/b/control-i/9-control-int-d-lo-inventarios

12. Panchi Mayo VP, Armas Heredia IR, Chasi Solórzano BF. Los inventarios y el costo de producción en las empresas industriales del Ecuador. Roca. Revista Científico-Educacional de la Provincia Granma. 2017;13(4):254-64. Disponible en: https://rev.udg.co.cu/index.php/rocad/Arkansas/vista/288

13. López, M., & Rodríguez, A. (2020). Gestión de inventarios en empresas de consumo masivo: un enfoque integral. Revista de Administración y Negocios, 15(2), 45-62.

14. González, J., & Fernández, P. (2019). El impacto de la supervisión en la reducción del robo interno en el sector retail. Revista de investigación empresarial, 78, 153-161.

15. Martínez, L., & Torres, R. (2021). Satisfacción laboral y conducta no ética en el lugar de trabajo: un análisis empírico. Revista Internacional de Gestión de Recursos Humanos, 32(4), 550-570.

16. Vásquez, E., & Salas, R. (2018). Controles internos y su relación con el hurto interno en empresas de logística. Contaduría y Administración, 63(2), 112-128.

17. Pérez, S., & Medina, T. (2017). Estrategias de prevención del robo interno: un enfoque en la cultura organizacional. Revista Latinoamericana de Administración, 15(3), 87-101.

18. Jiménez, C., & Álvarez, F. (2019). Efectividad de los sistemas de vigilancia en la prevención del robo interno. Revista de estudios de seguridad, 10(1), 45-61.

19. Rivas, J. y Carrasco, A. (2020). La relación entre la satisfacción laboral y el comportamiento delictivo en el trabajo: un estudio en el sector servicios. Ética empresarial trimestral, 30(2), 179-197.

20. Bermúdez, H., & Romero, A. (2021). El papel de la tecnología en la gestión de inventarios: análisis de casos prácticos. Revista de Tecnología e Innovación, 12(2), 33-50.

21. Córdova, M., & Herrera, P. (2018). Políticas organizacionales y su impacto en la ética laboral: un enfoque en el robo interno. Ética y comportamiento, 28(5), 389-403.

22. Naranjo, D., & Ceballos, F. (2022). Auditorías electrónicas y su efectividad en la reducción de robots internos: un estudio de caso. Revista de investigación contable, 20(3), 112-130.

23. Ramírez, T., & Gómez, J. (2019). Factores motivacionales del robo interno en empresas medianas: un estudio exploratorio. Revista de ética empresarial, 21(4), 613-627.

24. Vega, L. y Peña, C. (2020). El impacto de la satisfacción laboral en el desempeño ético de los empleados: evidencias empíricas. Revista de Psicología Laboral, 8(2), 45-58.

25. Villanueva, A. (2021). Controles internos y su relación con la incidencia del robo interno: un análisis cuantitativo. Revista internacional de revisiones de gestión, 23(2), 233-250.

** English translation of the original article published in Ecuacientífica, Vol. 1, No. 2, pp. 50-62.*

ISSN: 3091 -1796
Vol. 1, No. 2, PP. 63-76
Noviembre - abril 2023

# LA INFLUENCIA DE LA COMUNICACIÓN POLÍTICA EN REDES SOCIALES: UN ESTUDIO SOBRE EL IMPACTO DE TIK TOK EN LA OBRA PÚBLICA

# THE INFLUENCE OF POLITICAL COMMUNICATION ON SOCIAL NETWORKS: A STUDY ON THE IMPACT OF TIK TOK ON PUBLIC WORKS

Ximena Tapia[1]
*Escuela Superior Politécnica de Chimborazo, Riobamba, Ecuador*
ximena.suarez@espoch.edu.ec
https://orcid.org/0000-0003-3337-3316

Fecha de recepción: 12-10-2023 / Fecha de aceptación: 22-10-2023 / Fecha de publicación: 01-11-2023

**RESUMEN**

En la actualidad, la comunicación política a través de las redes sociales se ha erigido como un elemento crucial para que los líderes políticos puedan conectar con un público más amplio y, particularmente, con los segmentos poblacionales más jóvenes. En este contexto, la plataforma digital TikTok ha emergido como una alternativa novedosa y cada vez más relevante para la difusión de mensajes políticos. El presente estudio se propone analizar de manera exhaustiva la influencia que ha tenido el uso de TikTok por parte de los candidatos presidenciales ecuatorianos durante las elecciones de 2021, con el objetivo de comprender cómo esta red social puede incidir en la percepción, preferencias y patrones de voto de los electores. La metodología de esta indagación adoptó un enfoque cualitativo, fundamentado en un riguroso análisis de bibliografías enfocadas en contenido de los videos publicados por los principales aspirantes a la presidencia en la plataforma TikTok, complementado con una encuesta aplicada a ciudadanos para evaluar su nivel de exposición, interacción y reacción ante este tipo de material político. Los resultados ponen de manifiesto que los candidatos políticos recurrieron a TikTok como una estrategia de comunicación para alcanzar a un electorado más joven, empleando formatos dinámicos y atractivos, como tendencias, memes y narrativas. Si bien una proporción significativa de los encuestados expresó haber modificado su opinión a raíz de este contenido, su impacto directo en las decisiones de voto no resultó ser determinante. El estudio concluye que, si bien TikTok se ha consolidado como una herramienta relevante para la comunicación política, es necesario abordar su utilización con cautela y responsabilidad, a fin de garantizar la transparencia, el respeto y la veracidad en el discurso político en el entorno digital.

**Palabras clave** Ecuador; comunicación política, política, redes sociales, TikTok

**ABSTRACT**

Currently, political communication through social networks has emerged as a crucial element for political leaders to connect with a wider audience and, particularly, with the younger segments of the population. In this context, the digital platform TikTok has emerged as a novel and increasingly relevant alternative for the dissemination of political messages. This study aims to comprehensively analyze the influence of the use of TikTok by Ecuadorian presidential candidates during the 2021 elections, with the objective of understanding how this social network can influence the perception, preferences and voting patterns of voters. The methodology of this research adopted a qualitative approach, based on a rigorous analysis of bibliographies focused on the content of the videos published by the main presidential candidates on the TikTok platform, complemented with a survey applied to citizens to evaluate their level of exposure, interaction and reaction to this type of political material. The results show that political candidates used

** English translation of the original article published in Ecuacientífica, Vol. 1, No. 2, pp. 63-76.*

TikTok as a communication strategy to reach a younger electorate, employing dynamic and engaging formats such as trends, memes and narratives. Although a significant proportion of respondents expressed having changed their opinion as a result of this content, its direct impact on voting decisions was not decisive. The study concludes that, although TikTok has established itself as a relevant tool for political communication, it is necessary to approach its use with caution and responsibility, in order to ensure transparency, respect and truthfulness in political discourse in the digital environment.

**Keywords** Ecuador; political communication, politics, social networks, TikTok

## INTRODUCTION

Political communication is a fundamental discipline that not only articulates the discourse of leaders and parties, but also generates spaces for debate, dialogue and conversations that are essential for the functioning of a democracy. This practice manifests itself both at the beginning of a political leader's exercise and during electoral campaigns, becoming a key tool for influencing public opinion (1). In this context, political communication is not limited to informing, but seeks to persuade and mobilize citizens around certain topics and agendas.

It is noteworthy that political communication is an interactive process that involves the transmission of information between politicians, media and publics (voters); that is why it can be determined that political communication has become a highly relevant axis for the dissemination of the opinions, proposals and initiatives of political leaders, extending its influence beyond an electoral campaign.

Starting from these theoretical bases, and agreeing with (5), when he indicates that the works and actions of the rulers must be transmitted to society, in order to be able to receive feedback with the responses expressed by the different political parties, unions, academia, among other entities, whether for their acceptance, denial or total rejection. Therefore, politicians have made use of various media and strategies, with the objective that their communication convinces the electorate, and to persuade it on any point of view.

The participation of the media, and the use of new media, has allowed political information to be widely disseminated, contributing to the formation of public opinion (2); it was observed that, with television, political communication expanded, and that this continues and takes on relevance with new formats through the Internet.

It can be assured that political communication needs the media for its dissemination, and the public uses the media as a system of democracy, from a communicative perspective, as these are the ones that serve it the information, and that in turn serve society the data to make political decisions (3).

The Internet and social networks have created a new way of communicating, and this is not alien to the political field. Movements and their politicians must employ "new strategies and approaches," as Moguer observed in 2015 (4). Therefore, it can be said that "Government and politics are intertwined with the effective use of the media because of their enormous capacity to shape public opinion" (6).

However, the landscape of political communication has undergone an unprecedented transformation in the digital age. The migration from traditional dissemination channels, such as television and the press, to emerging social network platforms has reconfigured the way in which political messages are transmitted.

Today, networks such as Facebook, Twitter and Instagram have been widely studied, but the rise of TikTok as a political communication tool presents a new challenge and a unique opportunity. Incorporated in

** English translation of the original article published in Ecuacientífica, Vol. 1, No. 2, pp. 63-76.*

September 2016, which in recent years has grown in popularity, reaching more than 800 million active users per month worldwide (7).

This digital platform allowed new content alternatives, which are not only for entertainment and leisure, but rather for "something more than that and has gone from being simply a platform with superficial content to messages with a political background." This platform, known for its dynamic and creative format, has allowed political messages to reach younger audiences, facilitating the creation of viral content that can significantly impact public perception, consolidating itself as a novel and highly effective means for political actors to project their proposals, ideologies and image before the electorate, with a great reach to the new generations (8).

The findings of previous academic research evidence that the strategic use of social networks, such as TikTok, can exert a determining influence on the perceptions, preferences and voting patterns of voters, particularly among the younger population segments (8).

This is because these digital platforms allow political candidates to transmit their messages in a more dynamic, interactive manner, aligned with the interests, information consumption habits and communicational codes of users, especially the youngest; it should be noted that it is not guaranteed that the content that is managed is completely organized and fulfills the objective of generating a responsible public opinion among social network users.

In the context of the Ecuadorian presidential elections of 2021, an intensive and unprecedented use of the TikTok application was observed by the main aspirants to the presidential seat, who sought to take advantage of the potential of this social network to connect with a younger electorate and tune in with their concerns, preferences and aspirations. In addition to sharing information in real time, accompanied by attractive visual and narrative elements, which allows political leaders to present their management in a more accessible and close manner (7). This phenomenon raises questions about the true impact that the use of TikTok had on the electoral results and on the perception of the citizenry about the different candidates and their proposals.

In this sense, the present study aims to comprehensively analyze the influence of political communication through TikTok in the context of the Ecuadorian presidential elections of 2021, in order to understand how this digital platform can influence the perception, preferences and voting patterns of voters. To this end, a content analysis of the videos published by the main candidates on TikTok will be carried out, as well as nearby investigations that conducted a survey of the citizenry will be used to evaluate their level of exposure, interaction and reaction to this type of political content on the social network.

## MATERIALS AND METHODS

### Research method

This study adopted a qualitative approach, based on a bibliographic review that carried out a rigorous content analysis of the videos published by the presidential candidates on the TikTok platform during the Ecuadorian elections of 2021. This research technique allowed examining in a systematic and exhaustive manner the use of this social network as a political communication tool.

### Population or sample

This research was made up of the totality of the scientific literature available in the main academic databases at a global level. These included recognized platforms such as Scopus, Web of Science, Google

** English translation of the original article published in Ecuacientífica, Vol. 1, No. 2, pp. 63-76.*

Ecuacientífica
ISSN: 3091 -1796
Vol. 1, No. 2, PP. 63-76
Noviembre - abril 2023

Scholar and thesis repositories of various universities, where a total of 296 videos published by three candidates for the presidency of the Republic were examined: Guillermo Lasso, Andrés Aráuz and Xavier Hervas. The selection of these aspirants was based on their relevance and outstanding performance during the electoral contest, which made them significant case studies.

**Inclusion criteria**

a) Candidates who have actively used the TikTok platform as part of their campaign strategy

b) Candidates who have obtained outstanding performance in the elections.

**Exclusion criteria**

a) Candidates who have not used TikTok as part of their political communication

b) Candidates with marginal participation in the electoral process.

**Setting**

The research was developed in the context of the presidential elections of Ecuador 2021, focusing specifically on the use of the TikTok social network platform by political candidates as a communication and approach strategy to the voters.

**Measurements**

For data collection, various techniques were used, such as the exhaustive review of scientific articles, technical reports, guides and regulations issued by regulatory bodies. Once the relevant information was collected, an online survey directed at 182 people between 18 and 68 years of age was evidenced, with the purpose of obtaining information on the use and perception of TikTok in the political sphere. The questionnaire included closed, dichotomous and multiple-choice questions, which allowed relevant information on this study phenomenon to be collected.

**Statistical analysis**

The data obtained through the survey were analyzed using descriptive statistics techniques. The results are presented through graphs with the objective of understanding the influence that TikTok had on the political campaigns and the perception of users about the use of this platform by the presidential candidates.

## RESULTS

In the results obtained (2), in his thesis work it is highlighted that, in a work titled "TikTok, a superficial scenario that seeks depth. Second round electoral campaign in Ecuador 2021," it was mentioned that, during 2021, in Ecuador, the social network TikTok had a boom in the political sphere, due to the fact that several candidates for the presidency of the Republic of that country opened their official account on TikTok, which was used to communicate political messages, activities carried out during the campaign period.

The candidate Xavier Hervás was one of the pioneers marking a milestone on TikTok, managing to achieve popularity among the young public. The political consultant Jorge León pointed out in an interview with a newspaper that "the use of social networks and his participation in the debates held before the elections allowed his image and discourse to stand out, considering that the voters were asking for a change in politics" (9).

For his part, Guillermo Lasso, who would become the elected president of Ecuador, initially mentioned that he had no interest in using TikTok. However, on February 25, prior to the start of the second electoral

** English translation of the original article published in Ecuacientífica, Vol. 1, No. 2, pp. 63-76.*

round, he opened his account on this social network, which in just one day added 112 thousand followers (information taken from the candidate's official account, February 25, 2021). This strategy was added to his campaign with the purpose of capturing the attention of a younger public. Lasso used this social network to strategically position his political image and create his own narrative for this community (Figure 1). Other presidential candidates, such as Arauz and Pérez, also opened accounts on TikTok (Figure 2). Their objective was not to fall behind, and to capture the attention of the younger public, seeking popularity, and that their messages become trends on social networks (11), (12).

**Figure 1. Video with "red shoes" trends resource.**

*Source: (12)*

**Figure 2. Explanatory video of the proposal in the educational field.**

*Source: (12)*

The candidates were clear about which group they were going to target. The use of TikTok therefore became a political communication strategy on the part of the candidates and political forces. Through it, the empathy of various segments of the citizenry was obtained, who until that moment had perhaps maintained a posture of disinterest or rejection towards political movements and leaders. For this, they used diverse resources, such as political infotainment (trends, storytelling, hashtag), through TikTok, which contributed to the messages and images of the political leaders reaching the users of this social network (13).

Therefore, the research carried out in the canton of La Libertad, province of Santa Elena (Ecuador), with 40 young people from 17 to 20 years old who use the social network TikTok. They were given a survey on their use of social networks and political content. The results of the surveys are shown in Tables 1, 2, 3, 4, 5, 6 and 7 (11,12,13).

**Table 1. Survey question: Do you use your TikTok account to inform yourself about political topics?**

| Scale | Frequency | Percentage |
|---|---|---|
| Yes | 15 | 30% |
| No | 25 | 70% |
| **Total** | **40** | **100%** |

*Source: (3)*

In total, 40 people were surveyed for this study. When inquiring about the use of TikTok as a source of political information, it was found that 30% of the respondents, that is, 15 people, affirmed that they use this platform for that purpose. On the contrary, 70% of the participants, corresponding to 25 people, indicated that they do not resort to TikTok to inform themselves about political topics. These results suggest that, although a significant proportion of the sample uses TikTok as a means to stay up to date on political current affairs, the majority of the respondents do not use this social network for informational purposes in the political sphere.

**Table 2. Survey question: What content do you observe on TikTok?**

| Scale | Frequency | Percentage |
|---|---|---|
| Entertainment | 28 | 70% |
| Politics | 5 | 12% |
| News | 2 | 5% |
| Others | 5 | 13% |
| **Total** | **40** | **100%** |

** English translation of the original article published in Ecuacientífica, Vol. 1, No. 2, pp. 63-76.*

ISSN: 3091 -1796
Vol. 1, No. 2, PP. 63-76

Noviembre - abril 2023

*Source: (3)*

When analyzing the predominant type of content on TikTok, it was found that 70% of the responses corresponded to entertainment content, which indicates that the platform is used mainly for recreational purposes by users. In contrast, both political and news content occupied very low percentages, with 12% and 5% respectively, which suggests that the respondents do not resort to TikTok as a main source of information on these topics. Finally, the “others” category represented 13% of the responses, which evidences the existence of a variety of contents present on the platform that do not fit the main categories.

**Table 3. Survey question: Why do you observe political content on TikTok?**

| Scale | Frequency | Percentage |
|---|---|---|
| It entertains you | 38 | 95% |
| It summarizes political information in seconds | 1 | 2% |
| For the dissemination of contrasted political news | 1 | 3% |
| **Total** | **40** | **100%** |

*Source: (3)*

When inquiring about the main reason why users watch political content on TikTok, it was found that 95% of the responses indicated that the main reason was entertainment. This suggests that, although there is an interest in political topics, the main motivation of the respondents when consuming this type of content on the platform is enjoyment and distraction, rather than the search for contrasted information. In fact, only a small percentage (3%) of the participants mentioned the search for verified political news as the reason for watching this type of content on TikTok.

**Table 4. Survey question: Do you follow or have you seen the profiles of Guillermo Lasso or Andrés Arauz, former presidential candidates in 2021?**

| Scale | Frequency | Percentage |
|---|---|---|
| Yes | 15 | 37% |
| No | 25 | 63% |
| **Total** | **40** | **100%** |

*Source: (3)*

It stands out that, of a total of 40 respondents, 37% (15 people) affirmed that they do follow or have seen these profiles, while 63% (25 people) indicated that they do not.

**Table 5. Survey question: Do you think your opinion changed with any publication you saw on their profiles?**

| Scale | Frequency | Percentage |
|---|---|---|
| Yes | 21 | 52% |
| No | 19 | 48% |
| **Total** | **40** | **100%** |

*Source: (3)*

The table presented shows that 52% of the respondents affirmed that their opinion had changed, which suggests that social networks have a significant impact on the formation of opinions in this particular group. On the other hand, 48% of the respondents indicated that their opinions were not affected, demonstrating that, although social networks are influential, not all users are susceptible to opinion change through this medium.

** English translation of the original article published in Ecuacientífica, Vol. 1, No. 2, pp. 63-76.*

ISSN: 3091 -1796
Vol. 1, No. 2, PP. 63-76
Noviembre - abril 2023

**Table 6. Survey question: Was your popular election vote influenced by what was published on TikTok?**

| Scale | Frequency | Percentage |
|---|---|---|
| Yes | 9 | 22% |
| No | 31 | 78% |
| **Total** | **40** | **100%** |

*Source: (3)*

Evidencing that 78% affirmed that their vote was not influenced by the publications on TikTok, which suggests that, for the majority, the content of this platform was not a determining factor in their electoral decision. However, 22% of the respondents indicated that they were influenced by what they saw on TikTok, revealing that a considerable group of people consider that the content of this social network had an impact on their choice.

To complement the research, Table 7 shows the political communication strategies of the presidential candidates Guillermo Lasso and Andrés Arauz on the social network TikTok.

**Table 7. Types of resources for interaction with TikTok content**

| Category | Guillermo Lasso @guillermolasso | Andrés Arauz @ecuarauz |
|---|---|---|
| Memes | 13 | 3 |
| Trends | 12 | 17 |
| Storytelling | 4 | 3 |
| Publication without resource | 10 | 20 |
| **Total** | **39** | **43** |

*Source: (3)*

Where the results of the content analysis of the publications of the presidential candidates Andrés Arauz and Guillermo Lasso are highlighted, revealing some interesting patterns. On the one hand, Andrés Arauz surpassed Guillermo Lasso in the total number of publications, with 43 posts versus the 39 of his opponent, which suggests greater activity and presence on this social network on the part of Arauz. Likewise, Arauz stood out in the categories of “Trends” and “Publications without resource,” obtaining significantly higher numbers in these areas, which could indicate a communication strategy more focused on current topics and on the dissemination of direct messages.

On the other hand, Guillermo Lasso had a greater presence in the “Memes” category, despite having a lower total number of publications, which could signal a more informal strategy or one directed at a younger public. Regarding the “Storytelling” category, both candidates obtained relatively low results, which suggests that neither of them prioritized the narration of stories in their TikTok publications (13).

However, when inquiring about the influence that the political content disseminated on TikTok could have had on the voting decisions of the respondents, it was found that 44% were not influenced, 28% were influenced and 28% considered that they may have been influenced. These findings evidence that, although TikTok was used as a political communication tool, its impact on the final decision of the voters was not determining (13), (14), (15).

Finally, 80% of the participants considered that the political contents disseminated in digital media should be subject to greater regulation, while 20% opined that it was not necessary. Likewise, 90% of the respondents perceived that on some occasions the political contents on social networks showed lack of respect, rumors or attempts to discredit the opponents, which could affect the quality of the public debate (14), (15).

** English translation of the original article published in Ecuacientífica, Vol. 1, No. 2, pp. 63-76.*

ISSN: 3091 -1796
Vol. 1, No. 2, PP. 63-76
Noviembre - abril 2023

## DISCUSSION

The findings of this research make it clear that political communication through the social network platform TikTok has exerted a significant impact in the context of the Ecuadorian presidential elections of 2021. As evidenced in the results, the main aspirants to the presidency, such as Guillermo Lasso, Andrés Arauz and Xavier Hervás, adopted political communication strategies through this social network with the purpose of reaching a younger electorate and tuning in with their interests and preferences.

In consonance with what was stated by (16) and (17), political communication in the digital environment has established itself as a fundamental tool for influencing public opinion and mobilizing citizens around certain agendas and proposals. In this sense, the use of TikTok by Ecuadorian political candidates reflects the need to adapt to the new formats and communication platforms, as pointed out by (18), who highlights the importance of employing "new strategies and approaches" in the field of political communication.

The results of the survey carried out in this study reveal that a significant proportion of the young respondents (30%) use TikTok as a source of political information, which is consistent with what was stated by (19) and (20), who underscore the potential of social networks to influence the perceptions and preferences of voters, especially among the younger population segments.

However, it is important to highlight that, although the political content on TikTok managed to capture the attention of users, the main motivation for its consumption was entertainment, rather than the search for verified political information. This coincides with what was stated by (21), who point out that the use of TikTok by political candidates, although it allows presenting their management in a more accessible and close manner, does not guarantee that the generated content fulfills the objective of fostering a responsible public opinion.

Likewise, the results of the research indicate that, although 52% of the respondents affirmed that their opinion changed as a result of the publications on TikTok, only 22% considered that their final vote was influenced by the political content disseminated on this social network. This suggests that, although TikTok can exert a certain influence on the formation of opinions, its direct impact on voting decisions was not determining, which contrasts with what was stated by (22), (25), on the potential of social networks to influence the voting patterns of voters.

Finally, the results reveal a concern among the respondents about the need for greater regulation of political content in digital media, as well as the perception that on occasions this type of content lacks respect and promotes disinformation. This aligns with what was stated by various authors (23), (24), regarding the importance of guaranteeing the quality and truthfulness of political communication, in order to strengthen public debate and informed decision-making by the citizenry.

It should be noted that, although the findings of this research reveal the importance of political communication on emerging platforms such as TikTok, they also make clear the need to approach the use of these digital tools with caution and responsibility, in order to avoid the propagation of contents that may distort the perception of the voters or undermine the quality of political discourse. In this sense, it is fundamental that political actors, the media and the competent authorities work in a coordinated manner to establish guidelines and regulation mechanisms that allow guaranteeing transparency, respect and truthfulness in political communication through social networks.

** English translation of the original article published in Ecuacientífica, Vol. 1, No. 2, pp. 63-76.*

## CONCLUSIONS

Once the research carried out is finished, the following is concluded:

Political communication has changed from its content to the use of new media to communicate its message. The study examines how the candidates Andrés Arauz and Guillermo Lasso entered the social network of TikTok in order to reach a new public and attract the attention of young people to increase their reach and popularity. The political communication tactics of TikTok focused more on infotainment.

The visual material included storytelling tools, trends and memes, which on occasions did not disclose the campaign proposals, but were used to discredit the management of the other candidates through humor. Many audiovisual products exhibited trend, creativity, brevity and a “soft” message in their publications.

The research sought to discover the benefits of using political communication strategies on TikTok. The benefits include an increase in popularity, the expansion of audiences, the speed of the content, the implementation of new narratives and the achievement of a popular political discourse in digital media. One of the most significant advantages is involving young people in political matters.

Political leaders use social networks as a new communication trend that cannot be achieved with traditional media, such as immediate interaction, response to users and the creation of communities. This form of communication allows the political leader to interact directly with the audience and “humanizes” him.

Political communication must be organized effectively and the strategies that are implemented must fulfill the purpose of communicating the message. To increase the participation of young people who actively use social networks, it is necessary to adapt to the new digital communication media and formats. Therefore, social media such as TikTok help disseminate political content to attract the attention of digital communities.

## ACKNOWLEDGMENTS

We mainly thank the “Escuela Superior Politécnica de Chimborazo” for all the opportunities that exist in it, since through the research carried out we can learn a little more about everything incredible that exists inside and outside the country. To engineer María Belén Bravo Ávalos, for the help and the pertinent explanation for the realization of the scientific article. And more importantly to our parents, because they never leave us alone and are always supporting us so that we never give up.

## REFERENCES

1. Beer C. Is TikTok setting the scene for music on social media? [Internet]. GWI. 2019 [citado 2023 May 1]. Disponible en: https://blog.gwi.com/trends/tiktok-music-social-media/

2. Crespo I, Garrido A, Carletta I, Riorda M. Manual de Comunicación Política y Estrategias de Campaña. Candidatos, medios y electores en una nueva era. Buenos Aires: Biblos; 2011.

3. D'Adamo O, García V, Kievsky T. Comunicación política y redes sociales. Análisis de las campañas para las elecciones legislativas de 2013 en la ciudad de Buenos Aires. Rev Mex Opinión Pública. 2015;19:107-125.

4. El Universo. En la Izquierda Democrática ya ven a Xavier Hervas como el "relevo" del expresidente Rodrigo Borja [Internet]. El Universo. 2021 [citado 2023 May 1]. Disponible en: https://www.eluniverso.com/noticias/2021/02/10/nota/9619692/elecciones-presidenciales-ecuador-2021-xavier-hervas-izquierda/

Ecuacientífica
ISSN: 3091 -1796
Vol. 1, No. 2, PP. 63-76
Noviembre - abril 2023

5. González E. Redes sociales y procesos electorales: el avance de las e-campañas electorales en México. Ciudad de México: CONACYT; 2021.

6. Hidalgo Chica A, Cedeño Moreira C. Comunicación política en redes sociales durante la segunda vuelta electoral de Ecuador, año 2021. Análisis del uso de la red social Facebook. ReHuSo Rev Cienc Humaníst Soc. 2022;7(1):104-115.

7. Holtz-Bacha C. Web 2.0. Nuevos desafíos en comunicación política. Diálogo Político. 2013;1:11-27.

8. López Fernández V. Nuevos medios en campaña. El caso de las elecciones autonómicas de Madrid 2021 en TikTok. Universitas-XXI Rev Cienc Soc Humanid. 2022;36:221-241.

9. Moguer M. Comunicación política en las redes sociales: análisis del discurso político de ámbito local en los medios tradicionales y redes sociales [Tesis Doctoral]. Sevilla: Universidad de Sevilla; 2015.

10. Mohsin M. 10 estadísticas de TikTok que debes conocer en 2021 [Internet]. Oberlo. 2021 [citado 2023 May 1]. Disponible en: https://www.oberlo.es/blog/estadisticas-tiktok

11. Norris P. Campaign communications. En: New Challenges in the Study of Elections and Voting. Londres: Sage; 2002.

12. Ponce Camacho VE. TikTok como herramienta de comunicación política: una mirada a las elecciones presidenciales en Ecuador, 2021 [Internet]. Barcelona: Universitat Oberta de Catalunya; 2021.

13. Obando Muñoz V. El efecto Tiktok. Plataformas digitales y reconfiguración del escenario político electoral en Ecuador. Sociología y Política Hoy. 2021;5:175-184.

14. Ramírez Borja FJ. TikTok, un escenario superficial que busca profundidad. Campaña de segunda vuelta electoral en Ecuador 2021 [Tesis de Licenciatura]. Ambato, Ecuador: Universidad Técnica de Ambato; 2022.

15. Ramírez Rodríguez MI. Comunicación política y la influencia en la opinión pública de la comunidad de TikTok [Internet]. La Libertad, Ecuador: Universidad Estatal Península de Santa Elena; 2022.

16. Reyes Montes MC, O' Quinn Parrales JA, Morales Gómez JM, Rodríguez Manzanares E. Reflexiones sobre la comunicación política. Espacios Públicos. 2011;14(30):85-101.

17. Rúas X, Casero A. Comunicación política en la época de las redes sociales: lo viejo y lo nuevo, y más allá. AdComunica Rev Cient Estrateg Tendenc Innovación Comun. 2018;16:21-24.

18. Redondo M. #BlackLivesMatter, Donald Trump y 'Cayetanos': cuando TikTok cruzó la barrera de la política [Internet]. Hipertextual. 2020 [citado 2023 May 1]. Disponible en: https://hipertextual.com/2020/06/blacklivesmatter-donald-trump-y-cayetanos-cuando-tiktok-cruzo-barrera-politica

19. Sánchez Castillo S. La construcción del liderazgo político y la identidad escenográfica en TikTok. En: Sierra J, Barrientos A, coordinadores. Cosmovisión de la comunicación en redes sociales en la era postdigital. Madrid: McGraw-Hill Interamericana; 2020. p. 197-210.

20. Swanson D. El campo de la comunicación política. La democracia centrada en los medios. En: Muñoz Alonso A, Rospir JI, editores. Comunicación Política. Madrid: Universitas; 1995. p. 3-24.

21. Wilches J, Guerrero H, Niño C. Emociones políticas y narrativas prototípicas: TikTok en las campañas políticas, estudio de caso. RLCS [Internet]. 2024 Feb 26 [citado 2024 Sep 22];(82):1-28. Disponible en: https://nuevaepoca.revistalatinacs.org/index.php/revista/article/view/2234

22. Orbegozo-Terradillos J, Larrondo Ureta A, Morales i Gras J. TikTok y comunicación política: pautas de interacción e índice de engagement de candidatos y partidos en una campaña electoral. RLCS [Internet].

** English translation of the original article published in Ecuacientífica, Vol. 1, No. 2, pp. 63-76.*

2024 Jun 26 [citado 2024 Sep 22];(83):1-22. Disponible en: https://nuevaepoca.revistalatinacs.org/index.php/revista/article/view/2323

23. Pesántez-Valarezo B, Naguas-Nagua N, Avila-Rivas V. Tiktok y su influencia en la generación Z en la intención de voto campañas presidenciales del Ecuador 2023: caso Daniel Noboa. 593 Digital Publisher CEIT. 2024;9(4):27-37. https://doi.org/10.33386/593dp.2024.4.2399

24. Gómez Vilchis RR. Impacto de la redes sociales en la percepción ciudadana sobre la compra del voto en México. Rev Mex Opinión Pública. 2020;(28):37-55. https://doi.org/10.22201/fcpys.24484911e.2020.28.68479

25. Moreno-Cabanillas A, Castillero-Ostio E, Serna-Ortega Á. El impacto de las redes sociales en la campaña política: elecciones generales 2023 en España. Redmarka Rev Mark Apl [Internet]. 2024 Jun 28 [citado 2024 Sep 22];28(1):56-7. Disponible en: https://revistas.udc.es/index.php/REDMARKA/article/view/10114

Ecuacientífica
ISSN: 3091 -1796
Vol. 1, No. 2, PP. 77-94
Noviembre - abril 2023

# IMPACTO DE LA DOBLE JORNADA LABORAL: EFECTOS DEL ESTUDIO Y TRABAJO EN LOS ESTUDIANTES

## IMPACT OF DOUBLE WORKING DAYS: EFFECTS OF STUDY AND WORK ON STUDENTS

Ana Jimenez[1]
*Escuela Superior Politécnica de Chimborazo, Riobamba, Ecuador*
ana.jimenez@espoch.edu.ec
https://orcid.org/0000-0002-0059-9514

Fecha de recepción: 14-10-2023 / Fecha de aceptación: 28-10-2023 / Fecha de publicación: 01-11-2023

**RESUMEN**

Hoy en día, es bueno que los estudiantes universitarios, tanto del sector público como del privado, combinen la educación y el trabajo. Ambos cambios pueden causar estragos en la salud física y mental, generando estrés, fatiga, ansiedad y depresión. Es importante comprender esto para desarrollar intervenciones que promuevan la salud de los estudiantes. Por eso, nos esforzamos por crear un entorno de aprendizaje seguro y justo. El objetivo de este estudio fue examinar el impacto de la combinación de estudio y trabajo en los estudiantes universitarios y poder identificar posibles estrategias de apoyo para estos estudiantes para equilibrar ambas responsabilidades. La metodología empleada fue de tipo descriptiva, permitiendo a los estudiantes identificar los factores personales que influyen en su rendimiento académico, para ello se trabajó con estudiantes de la Escuela Superior Politécnica de Chimborazo, específicamente a 75 estudiantes de la carrera de Administración de Empresas del PAO 1 y PAO 2. En términos de diseño, la investigación fue exploratoria y se basó en encuestas en línea para la recolección de datos. Como resultado, se obtuvo información valiosa en la cual indica, que el trabajo no solo es una necesidad económica, sino también un componente crucial en su formación y en la preparación para el mercado laboral. Sin embargo, se observa que el trabajo afecta en el rendimiento académico ya que algunos estudiantes experimentan una disminución en sus calificaciones y un mayor riesgo de abandono de las aulas universitarias. Pero, otros estudiantes pueden desarrollar habilidades como gestión del tiempo y disciplina que mejoran su desempeño. En conclusión, la dualidad de estudiar y trabajar presenta tanto desafíos significativos como oportunidades para los estudiantes universitarios. A pesar de los retos, los beneficios a largo plazo, en términos de desarrollo profesional y personal, pueden ser considerables.

**Palabras clave** Jornada, efectos del estudio, estudiantes universitarios, rendimiento académico, trabajo

**ABSTRACT**

Nowadays, in higher education, both in public and private universities, it is increasingly common for university students to combine their studies with a job. This effort to carry out a double shift can have important repercussions on their physical and mental health, often manifesting in the form of stress, fatigue, anxiety and depression. Recognizing and understanding these effects is essential to create support strategies that promote the general well-being of students. The objective of this study was to examine the impact of the combination of study and work on university students, from the Polytechnic School of Chimborazo, specifically 75 students of the Business Administration degree from PAO 1 and PAO 2, and to be able to identify possible support strategies for these students to balance both responsibilities. The methodology used was descriptive, allowing students to identify personal factors that influence their academic performance. In terms of design, the research was exploratory and was based on online surveys

** English translation of the original article published in Ecuacientífica, Vol. 1, No. 2, pp. 77-94.*

for data collection. As a result, valuable information was obtained indicating that work is not only an economic necessity, but also a crucial component in their training and preparation for the labor market. However, it is observed that work affects academic performance as some students experience a decline in their grades and a higher risk of dropping out of university classrooms. But, other students can develop skills such as time management and discipline that improve their performance. In conclusion, the duality of studying and working presents both significant challenges and opportunities for university students. Despite the challenges, the long-term benefits, in terms of professional and personal development, can be considerable.

**Keywords** Working hours, effects of study, university students, academic performance, work

## INTRODUCTION

Nowadays, in the field of higher education in public and private universities, it is common to find university students who combine work with study (1). The reason for this duality is given by the challenges imposed by the labor world, socioeconomic conditions and globalization, since the majority of students who work come from families with limited economic resources and, in order to achieve their goal of having a profession, they access or strive with a part-time job or by adjusting their free study schedule (2).

When the person assumes the responsibility and commitment of the work role, the time factor becomes a scarce resource. In this case, we find the person as a university student and at the same time a worker; therefore, it is based on the premise that priorities are established to fulfill the responsibilities, and that the labor activity is developed to finance their university studies, achieve economic independence or open a path in the competitive labor market (3).

The central problem of the present research is the double shift and how it affects academic performance, that is, the effect of study and work on the university students of the Escuela Superior Politécnica de Chimborazo is an extremely important and relevant issue that affects many young people who seek to balance their academic and labor responsibilities.

Authors mention that academic performance is important and is obtained as a product of a set of issues that surround the student and constitutes an indicator to measure the efficiency of a higher education system, through the information it provides for its evaluation (4).

Therefore, the students of the Escuela Superior Politécnica de Chimborazo in the city of Riobamba are not exempt from this problem; on many occasions, certain economic difficulties arise and, being young, they opt to work and study as a mechanism to cover their needs and finance their student expenses, seeking to balance their responsibilities in order to achieve both academic success and professional progress (5).

After the transformation of the world, work has been combined with study and has become a very essential part of the labor market, in order to obtain experience and effectively incorporate into the labor world after obtaining the professional degree, since companies need qualified and suitable labor to occupy their job positions.

Combining study with work represents a very common reality among university students; the effects of double shifts on university students will focus on mental health, academic performance and personal development in the educational sphere. The need to find effective strategies to manage these responsibilities is crucial for the well-being and success of university students.

** English translation of the original article published in Ecuacientífica, Vol. 1, No. 2, pp. 77-94.*

Ecuacientifica REVISTA MULTIDISCIPLINARIA
ISSN: 3091 -1796
Vol. 1, No. 2, PP. 77-94
Noviembre - abril 2023

On the other hand, working while studying can also offer substantial benefits. Students can develop valuable skills such as time management, resilience and the ability to work under pressure. Work experience, especially in fields related to their studies, can enrich their theoretical understanding and provide a competitive advantage upon graduation. In addition, financial independence can reduce stress related to student debt and allow greater autonomy in educational and personal decisions (6).

This study proposes to explore these crucial issues. Through rigorous research, it will examine the multifaceted effects of work on the academic performance, mental health and professional development of ESPOCH students. It will analyze the challenges faced, but also highlight success stories and effective strategies that students have employed to thrive in both spheres (7).

Beyond ESPOCH, this study has implications for higher education in general. In a world where economic pressures and demands for practical skills are increasing, understanding and supporting working students is essential. This work will not only contribute to the well-being and success of individual students, but will also inform policies and practices that can improve equity, retention and effectiveness of university education in Ecuador and beyond.

In essence, this study focuses according to the National Institute for the Evaluation of Education (INEE), the Mexican National Education System (SEN) has not managed to distribute quality education for all (8). Some of the causes of this situation are social inequality and the unfair distribution of educational services; for the INEE, the SEN, and consequently the schools, tend to reproduce inequities and inequalities that harm the most vulnerable students, and at the same time benefit the most favored, which can be observed in access, permanence and achievement of learning of the most vulnerable sectors. The latter are those who receive educational training with various disadvantages; students from the most vulnerable sectors have less favorable conditions for learning (9).

In the context of contemporary higher education, an increasingly prevalent phenomenon is that of students who combine their university studies with part-time or even full-time work. This “double shift” is particularly evident in institutions such as the Escuela Superior Politécnica de Chimborazo (ESPOCH), where a growing number of students face the challenge of balancing academic demands with labor responsibilities.

That the university students of the Escuela Superior Politécnica de Chimborazo, Faculty of Business Administration, who are also workers, present a low or good academic performance, but not excellent, because their labor condition requires time and responsibility with greater dedication to achieve good academic performance.

The need to work while studying arises from various circumstances. For some students, it is a matter of economic survival, since they must cover tuition, housing, food and other costs associated with higher education.

For others, it is an opportunity to gain financial independence or to acquire valuable work experience in their fields of study. Regardless of the motivations, this reality raises a series of critical questions about the impact of this double burden on the academic, personal and professional well-being of students.

On the one hand, the double shift can present significant challenges. Students may experience chronic stress when trying to meet academic deadlines and labor responsibilities. Physical and mental fatigue can affect their ability to concentrate on studies, potentially leading to diminished academic performance. In addition, limited time can restrict their participation in extracurricular activities, social networks and personal growth opportunities, fundamental aspects of the university experience (10).

ISSN: 3091 -1796
Vol. 1, No. 2, PP. 77-94
Noviembre - abril 2023

Worldwide, university institutions determine their own evaluative criteria to obtain a weighted average of the subjects that the student is taking, taking into account elements such as the number of subjects, the number of credits and the value obtained in each of them; thus, the grades obtained represent “a precise and accessible indicator to assess academic performance,” assuming that these show the student’s achievements in personal, academic and social aspects; in addition, they are the result of factors both of a personal type of the student, as well as didactic of the teacher, contextual and institutional, which finally influence student performance (11).

In fact, in a study developed at the University of Salamanca by the “Helmántica” group, the perception and opinion of the surveyed university students on the causes of low academic performance were considered, distinguishing among the personal causes: absence of aptitudes and capacities, little mastery of study techniques, scarce or lack of dedication to their studies during the class period; as well as absences from classes, disorganization of time and study planning; absence of self-demand or sense of responsibility, dissatisfaction with the chosen career, lack of proportion between efforts and results, personal problems (12).

Montes and Lerner mention that they associate communicative skills with: disposition to ask for help, express ideas and propose solutions for their concerns, listening to the points of view of family members, teachers, classmates and friends; skill to integrate with classmates to study. While social skills are related to the influence, both positive or negative, of friends, couple relationships and responsibility with academic activities including the fact of facing some personal grief during their stay at the University (13).

Regarding personal qualities, the perception of students about the capacities to: concentrate, both in study and work factors such as paying attention and understanding, controlling oneself in the face of difficult situations and the capacity to plan and use time in accordance with the demands of their academic commitments was sought. Another aspect taken into account was the motivation that students have to continue their university studies with the support of programs from the institution (14).

A higher educational level and a better occupation of the parents can motivate students to achieve higher school performance; in addition, dedicating some hours of work. Even the quality of the work and the length of the work shifts can influence the academic performance of students, since it reduces the time available to attend classes, study or participate in various school activities. However, if the labor conditions of the students favor the needs of the study (for example, having a job complementary to the curriculum of studies, on-campus university work, short schedules and shifts or flexible jobs, etc.), then the work can influence a higher academic performance.

But on the contrary, if the student does not have the support of their families, of the higher institution, and even less of the workplace, the student will feel under so much pressure since they have various activities and responsibilities on their shoulders which they have to carry forward with priority on successfully obtaining a professional career.

In addition, it is important to highlight that many studies analyze academic performance based on other explanatory variables that are not strictly labor-related, among them scholarship programs based on socioeconomic characteristics and academic level, that is, by the average of grades obtained during the previous study period granted by the institutions.

Studying and working at the same time has become a very popular option among young people who wish to apply their academic knowledge in real situations, advance in their careers and improve their quality of

** English translation of the original article published in Ecuacientífica, Vol. 1, No. 2, pp. 77-94.*

Ecuacientífica
ISSN: 3091 -1796
Vol. 1, No. 2, PP. 77-94
Noviembre - abril 2023

life. The advantages are many: acquiring work experience before graduating provides students with a significant competitive advantage and allows them to finance their studies. In addition, for those already in the labor market, continuing to study is a way to stay updated, advance professionally and aspire to better positions and salaries.

However, this path also has its challenges such as the feeling of not having a social life during the study period is common. Even so, being able to apply the knowledge acquired in the daily work environment makes learning more meaningful and valuable, which motivates students when seeing the direct impact of their education on their work. Nevertheless, the balance between work and study can be exhausting. It requires great organization and discipline, with sleepless nights and weekends dedicated to study.

When you work and study at the same time, you will learn to intensely value those "small" pleasures of life that you previously took for granted. The free time you find to enjoy activities such as reading, going out with friends, spending moments with the family or simply resting will become a treasure. Every free minute outside of your responsibilities will become incredibly precious and you will realize how special it is to have those moments of disconnection and joy (15).

This article was motivated by the fact of observing in public universities of the city of Riobamba-Ecuador, that their undergraduate students study and at the same time work, which leads to presume that this makes it difficult for them to fully comply with academic activities, and has a negative incidence on their academic averages. This phenomenon is known as "double shift," which has a great series of challenges and opportunities that can affect university studies in their academic performance (4).

Therefore, the objective of the research is to observe the impact that the combination and balance between study and work of the young university students of the Escuela Superior Politécnica de Chimborazo has, specifically 75 students of the Business Administration career of PAO 1 and PAO 2, and to be able to identify possible support strategies for these students, since it is a very common reality among them.

## MATERIALS AND METHODS

Given that the purpose of the research was to know the impact of the double shift and its interference in the level of academic performance in the students of the Faculty of Business Administration, a sample of 75 students was chosen, who belong to and are studying the aforementioned career. For this study, the necessary sample size was calculated to analyze the students of the Business Administration career at the Escuela Superior Politécnica de Chimborazo.

Using a confidence level of 95% and a margin of error of 5%, it was determined that the adequate sample would be approximately 278 students, assuming that the total number of students in the career is 1000. However, due to practical limitations and the specific objective of this study to provide a detailed and precise vision, we decided to select a sample of 75 students. This reduced sample size allows us to focus on a more manageable analysis and obtain results that, although with a wider margin, will still be valuable for understanding the trends and patterns within this population.

To start the survey, questions with required data of main characteristics such as age, sex and the PAO to which they belong were first formulated; subsequently, the search for information was emphasized through questions, consulting data on the benefits, challenges and responsibilities that working and studying entail.

** English translation of the original article published in Ecuacientífica, Vol. 1, No. 2, pp. 77-94.*

ISSN: 3091 -1796
Vol. 1, No. 2, PP. 77-94
Noviembre - abril 2023

**Techniques used**

Google Forms: This platform was used to create and distribute surveys to students, which allowed collecting data efficiently through a shared link.

Sampling techniques: A simple random sampling methodology was used to select 75 students, prioritizing those of the Business Administration career. Although a sample size of 278 students was initially calculated for a 5% margin of error, the sample size was adjusted due to practical limitations.

Statistical techniques: Subsequently, the collected data were tabulated and analyzed using descriptive statistical analysis tools. These analyses allowed identifying trends and patterns in the students' responses, focusing on aspects such as workload, academic stress, and the adaptation mechanisms used.

In addition to this research and with the information obtained, it is possible to better understand the needs of the students and to justify the implementation of more flexible economic and labor support programs. Working and studying simultaneously can generate levels of stress, anxiety and exhaustion which can generate negative consequences on the general well-being of the students.

The evaluation of the impact of work on these aspects can help the institution to develop more effective psychological support services and wellness programs. Likewise, time management is an essential skill for students who study and work. This will lead to drafting, after the analysis carried out, the respective conclusions and also issuing a criterion or opinion on the results and the topic itself.

In which a mixed-approach study was carried out, combining quantitative and qualitative methods, to obtain a comprehensive understanding of the phenomenon. For this, demographic questions and open multiple-choice questions were applied.

## RESULTS

The survey was divided into two sections; the first section is called demographic data or information and the second section was made up of a series of direct multiple-choice questions that determined the impact of the double shift, its challenges, advantages and support strategies for this group of students.

After the analysis of the demographic data of Figure 1, we determined that the majority of our respondents, 52%, are women as opposed to 48%, which reflects that the general demographic composition of the career or greater participation was of women, who represent a large number for this study. In Figure 2, we have the age ranges covered by the research, of which the predominant one is from 18 to 21 years, which shows that there is a very young age range who study and work in order to subsist.

In Figure 3, the focus is on the semester that our interviewees are studying; the majority of these are concentrated in PAO 1, being them the first stages of the career who try to balance their academic responsibilities. From the analysis it was concluded that of the 75 surveyed students, most were women between 18 and 25 years of age, mostly from PAO 1.

ISSN: 3091 -1796
Vol. 1, No. 2, PP. 77-94
Noviembre - abril 2023

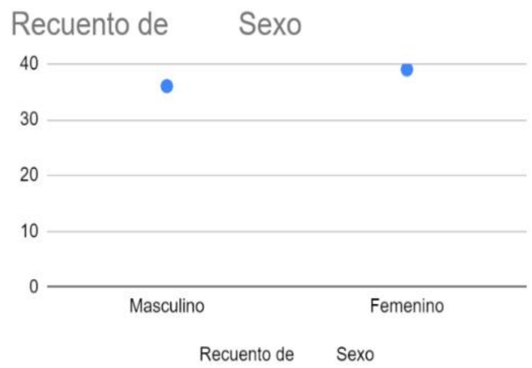


**Figure 1. Sex count**

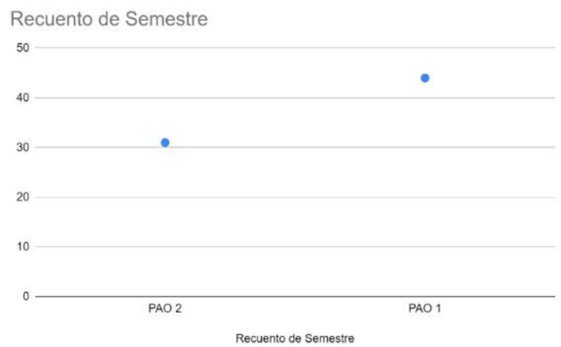


**Figure 2. Age count**

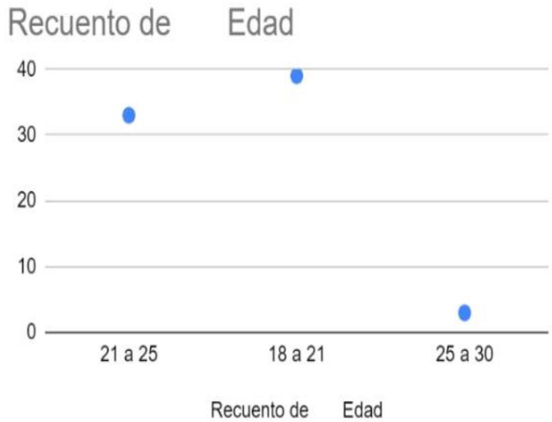


**Figure 3. Semester count**

** English translation of the original article published in Ecuacientífica, Vol. 1, No. 2, pp. 77-94.*

ISSN: 3091 -1796
Vol. 1, No. 2, PP. 77-94
Noviembre - abril 2023

Continuing with the second section, the following results are obtained:

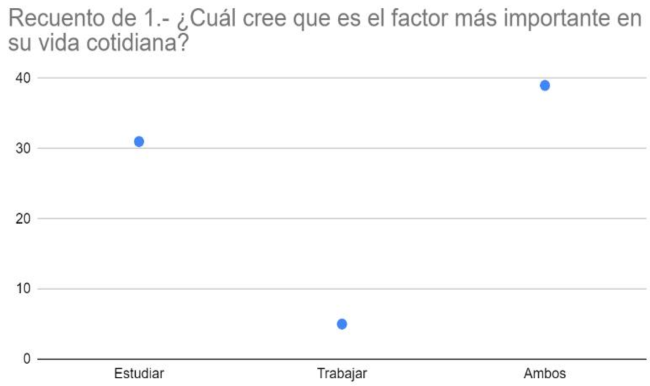


**Figure 4. Most important factor in daily life**

After carrying out the question reflected in Figure 4, it led to the conclusion that knowing the answer to this question implies analyzing that 58% of the surveyed students try to distribute their time between work and study, since this highlights the importance of balancing these responsibilities, and a significant demand for structural support from the educational institution is suggested. This analysis not only helps us understand the current needs of the students.

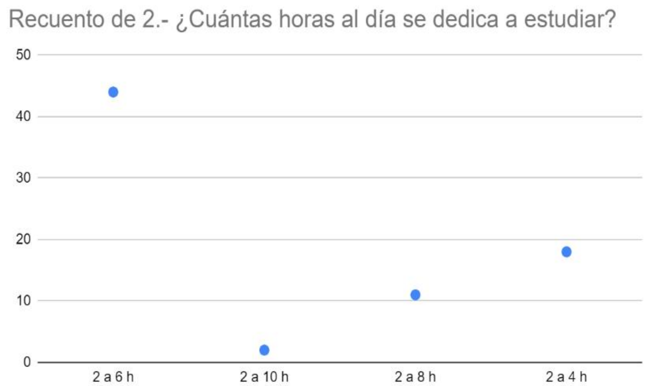


**Figure 5. Hours dedicated to studying**

It is observed in Figure 5, the hours that students dedicate to studying; 58.7% dedicate between 2 and 6 hours daily, which may indicate a moderate load that is manageable for the majority of students. When analyzing these figures, we can underline the importance of adapting or implementing certain support strategies to address the different needs and experiences of the students. The programs and resources must be designed so that all students manage their time and responsibilities more effectively and maintain their physical and mental well-being.

ISSN: 3091 -1796
Vol. 1, No. 2, PP. 77-94
Noviembre - abril 2023


**Figure 6. Hours dedicated to working**

It is observed that in Figure 6 there is a distribution where the majority of respondents, 57.3%, dedicate between 2 and 4 hours to the activity, which is a more common and possibly the most balanced time range for students, but unlike 4% who dedicate up to 10 hours of daily work, it represents the students with the greatest time load, who could be susceptible to problems of work and study overload, which would put their mental health or a premature dropout from the university and their career at risk.

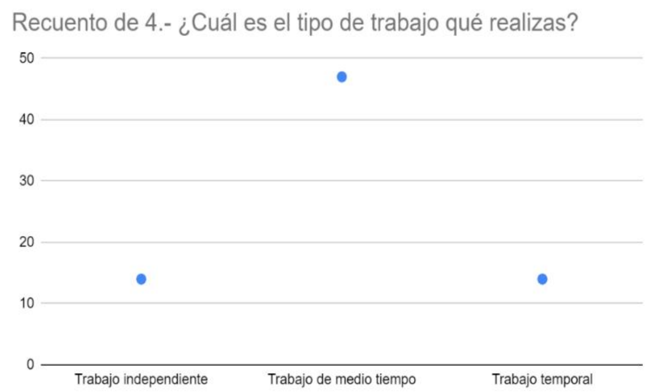


**Figure 7. Type of work performed**

It is observed that in Figure 7, it is reflected that part-time work, which accounts for 62.7%, is the one that predominates among students, reflecting a viable balance between study and work, so that activities are not overloaded and slightly more flexible schedules can be had and time can be better used. These findings underline the need for specific and adapted support for each type of student-worker, allowing all to maximize their learning and development opportunities without compromising.

** English translation of the original article published in Ecuacientífica, Vol. 1, No. 2, pp. 77-94.*

ISSN: 3091 -1796
Vol. 1, No. 2, PP. 77-94
Noviembre - abril 2023

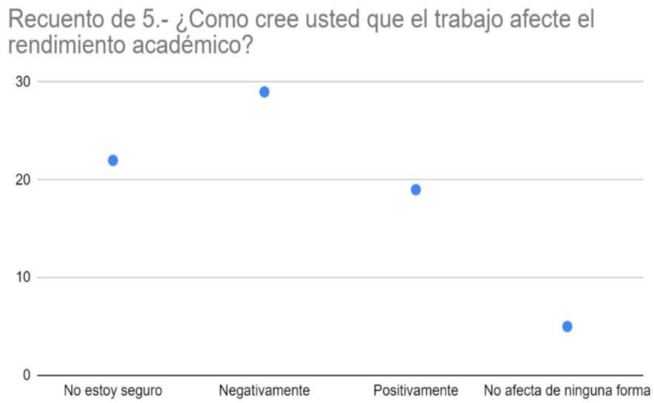


**Figure 8. Effect of work on academic performance**

Figure 8 presents the distribution of responses to the question about the impact of work on the academic performance of students. The results indicate that 28.7% of respondents perceive a negative effect of work on their academic performance. 19.3% of students do not have a clear perception of how work affects their performance, indicating uncertainty or neutrality regarding the impact of employment on their studies. On the other hand, 25.3% of respondents consider that work has a positive effect on their academic performance.

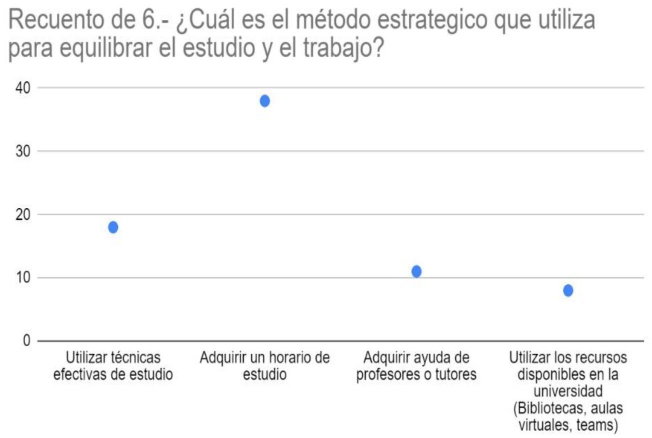


**Figure 9. Strategic methods to balance study and work**

In Figure 9 regarding the strategic method that the student uses to balance study and work, it is observed that 50.7% respect and acquire a study schedule, followed by 24% of students who use effective study techniques, then 14.7% acquire help from teachers and their tutors and finally 10.7% use resources available at the university such as libraries, virtual classrooms and more.

What is deduced is that the student who also works organizes their time in order to fulfill both roles and obtain their third-level degree while also fulfilling work experience, although with few work hours which we could assume would help at the time of job search with a professional degree.

ISSN: 3091 -1796
Vol. 1, No. 2, PP. 77-94
Noviembre - abril 2023

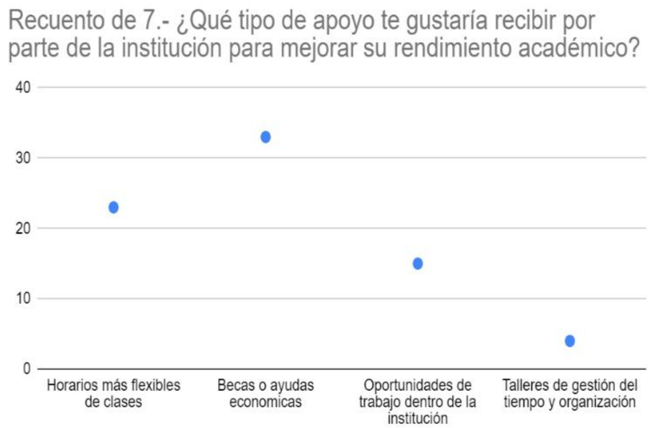


**Figure 10. Type of support desired from the institution**

In relation to the type of support that students would like to receive from the higher educational institution, the data presented in Figure 10 indicate that 44% of respondents prefer to receive scholarships or economic aid. 30.7% of students express the need to have more flexible class schedules. Finally, a smaller percentage of students points out the importance of having time management and organization workshops.

This analysis reveals that students who work and study simultaneously have a strong preference for financial support, reflecting a critical need for resources that allow them to cover their daily expenses while fulfilling their academic roles. Flexibility in class schedules is also a significant support that students consider essential to manage their work and study commitments.

Although in a smaller proportion, the request for time management workshops underlines the importance of acquiring skills that facilitate organization and balance between both responsibilities.

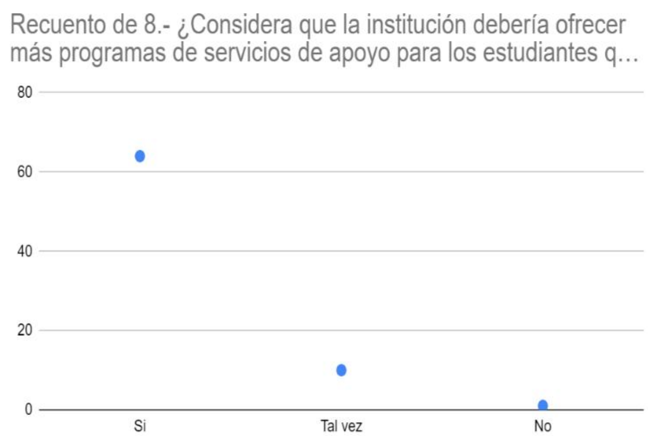


**Figure 11. Support programs that universities should offer**

In Figure 11, it is observed that 85.3% of respondents consider that the institution should offer support service programs specifically directed at working students. 13.3% of students stated that they might access these programs if they were available.

These results indicate a significant demand on the part of low-income students for the educational institution to provide greater support services. The majority of students recognize the need for these

** English translation of the original article published in Ecuacientífica, Vol. 1, No. 2, pp. 77-94.*

ISSN: 3091 -1796
Vol. 1, No. 2, PP. 77-94
Noviembre - abril 2023

programs, pointing out that their implementation could alleviate the considerable effort they make in balancing their responsibilities.

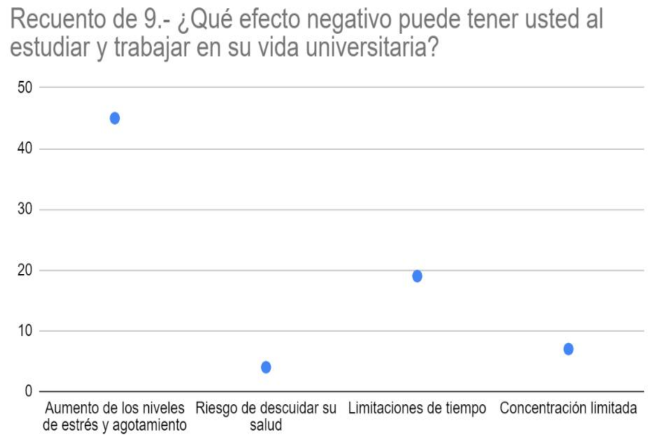


**Figure 12. Negative effects of studying and working on university life**

The data presented in Figure 12 reveal that 60% of respondents experience an increase in the level of stress and exhaustion. In addition, 25.3% report that their time is limited, and 9.3% indicate limited concentration due to their performance. The analysis of these data suggests that the symptoms of stress, exhaustion, and lack of time and concentration are prevalent among working students. Although these symptoms may not have an immediate severe impact on young students, the accumulation of tensions and the continuous increase in fatigue levels.

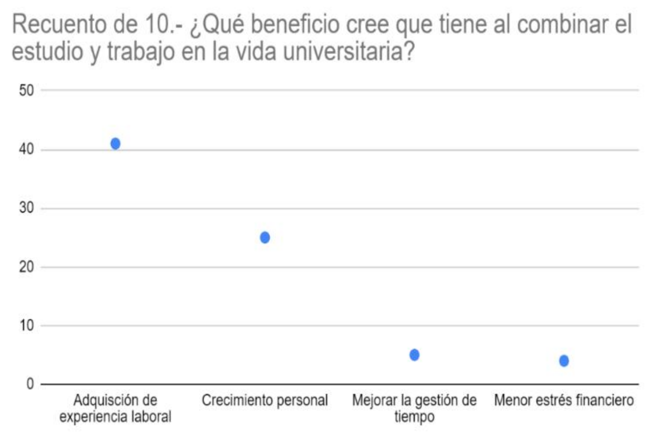


**Figure 13. Benefits of combining study and work in university life**

When asking students about the benefits of combining study and work during university life, the results, presented in the illustration, show that 54.7% of respondents value the acquisition of work experience while studying. 33.3% of students highlight personal growth as a significant benefit, and a smaller percentage mentions the reduction of financial stress.

## DISCUSSION

In reality, the topic that has been addressed is of important interest since it implies that the research can be deeper; however, relevant information has been obtained since the total collaboration of the surveyed students was obtained, that is, regarding the demographic information the result obtained was that of the

** English translation of the original article published in Ecuacientífica, Vol. 1, No. 2, pp. 77-94.*

ISSN: 3091 -1796
Vol. 1, No. 2, PP. 77-94
Noviembre - abril 2023

75 surveyed students most were women between 18 and 25 years of age, mostly from PAO 1; it can be deduced that the career itself is of greater female interest, and contrasting with age it can be related to what (16) mentions, that it is important to be able to balance university activities with work but age greatly influences performance when these two roles are carried out.

Regarding the students of the Faculty of Business Administration making their life simultaneously both working and studying is important, that is, they put into practice the organization of their time both to cover the activities of work with those of study; however, the most important results must be reflected in academic performance, which (17) informs us in his blog that balancing studies and work forces young people to manage their time effectively. This skill has incalculable value, since it not only helps them excel in studies, but also prepares them for the rigors of adult life.

Likewise, it is observed that students reveal the importance of clearly understanding the contextual factors that can influence the responses, and being aware of the possible variability in the responses. An adequate interpretation of the collected data will require taking these aspects into account, which according to (18), tells us to be realistic, obtaining good school results while working or raising a family will challenge you more than ever in life. The good news is that yes it can be achieved!, as long as you have the conviction that you will reach your objectives and goals.

Continuing with the analysis of the students who seek part-time jobs because the rest of the hours are dedicated to fulfilling academic activities, fulfilling their obligations occasionally in a partial manner since on evaluation days and project delivery more time is required to be able to perform the role of student with greater responsibility; this result is related to what the page of (19) mentions. The majority of the research indicates that it is ideal to work between 10 and 15 hours per week during full-time university studies.

Adding to the above, the students who work at the same time as studying have a negative manner since by being working they do not have sufficient time to carry out tasks, prepare for an evaluation or simply prefer even to miss classes to remain at work with the objective of generating economic income that helps to cover their student expenses who in their majority are not from the same city but travel from any point of Ecuador; we relate with (20), the higher educational and economic level of the parents has an impact on a higher academic performance of the university student and that working and studying at the same time reduces academic performance.

Likewise, the group of students who fulfill a double shift expect with a greater desire that the institution can consider their situation and help or issue an economic scholarship to be able to partially cover their daily needs fulfilling the role of students and workers.

The analysis of this question implies understanding the importance of recognizing the specific needs of different student groups, evaluating the adequacy of current support services and considering a variety of factors that may influence the perceived needs of working students, contrasting this analysis with (21), the purposes that scholarships may have; here three motivations are included: to boost entry to a certain educational type; to boost school permanence after entry; and to foster greater learning achievements.

It should be highlighted that the majority of the female students who fulfill the double shift end up with an increase in the level of stress and exhaustion, followed by limited time to fulfill student obligations, tightening with what is mentioned by (22) the quality of life of students when they present this type of stress is usually poor, leading to presenting anxiety and depression, along with psychological distress.

** English translation of the original article published in Ecuacientífica, Vol. 1, No. 2, pp. 77-94.*

ISSN: 3091 -1796
Vol. 1, No. 2, PP. 77-94
Noviembre - abril 2023

## CONCLUSIONS

Through the results obtained it was concluded that the need to work while studying often reflects socioeconomic inequalities. It is important to address this inequality of opportunities that students possess; regardless of their financial situation, they should have equal opportunities for academic success, since the challenges in students who combine university studies with work face significant challenges, such as time management, stress, physical and mental fatigue, and the difficulty of maintaining optimal academic performance, also affecting social relationships and quality of life.

According to the research topic it is observed that work affects academic performance since some students experience a decrease in their grades and a higher risk of dropping out of university classrooms.

However, other students can develop skills such as time management and discipline that improve their academic performance; on the other hand, when speaking of the benefits obtained from studying and working, it is reflected in the long term, despite the challenges, while working one studies this can offer significant benefits such as students acquiring work experience, developing professional skills, gaining financial independence and being able to have a competitive advantage upon graduation.

Regarding the need for institutional support, it is considered that ESPOCH should carry out a study with greater research interest and recognize the unique needs of working students.

It is crucial to offer flexible schedules, academic and psychological counseling services, and scholarship or financial aid programs to alleviate the burden. This phenomenon should influence educational policies, promoting more flexible programs, distance learning, and university-company collaborations that facilitate internships or part-time work related to the studies.

## REFERENCES

1. Bartolj T, Polanec S. Does Work Harm Academic Performance of Students? Evidence Using Propensity Score Matching. Res High Education. 2017; 3: p. 401-429.

2. Barreto D, Celis C, Pinzón I. Estudiantes universitarios que trabajan: subjetividad, construcción de sentido e in-satisfacción. Revista Virtual Universidad Católica Del Norte. 2019 Septiembre-Diciembre;(58): p. 96–115.

3. Ozuna L. Universitarios trabajadores y rendimiento académico, un análisis de su relación. Universidad Nacional de Pilar. 2021 Diciembre 29.

4. UNIR. [Online].; 2021. Available from: https://ecuador.unir.net/actualidad-unir/practicas-pre-profesionales/

5. Medina N, Fereira, Marzol. Factores personales que inciden en el bajo rendimiento académico de los estudiantes de geometría. Revista de Estudios Interdisciplinarios en Ciencias Sociales. 2018; 20(1): p. 4-28.

6. ESPOCH. BIENESTAR ESTUDIANTIL Y POLITÉCNICO SOCIALIZA SUS SERVICIOS A FAVOR DE LOS ESTUDIANTES. ESCUELA SUPERIOR POLITÉCNICA DE CHIMBORAZO. [Online].; 2024. Available from: https://historicoweb.espoch.edu.ec/index.php/component/k2/item/5278-bienestar-estudiantil-y-polit%C3%A9cnico-socializa-sus-servicios-a-favor-de-los-estudiantes.html

7. RESOLUCIÓN 606.CP.2021 E. ESCUELA SUPERIOR POLITÉCNICA DE CHIMBORAZO, Dirección de Secretaría General. [Online].; 2021. Available from: https://apirepositorio.espoch.edu.ec/server/api/core/bitstreams/8d371519-4039-4dcd-a704-a1fb9fd0ce83/content

ISSN: 3091 -1796
Vol. 1, No. 2, PP. 77-94
Noviembre - abril 2023

8. INEE. Instituto Nacional para la Evaluación de la Educación. [Online].; 2013. Available from: https://es.wikipedia.org/wiki/Instituto_Nacional_para_la_Evaluaci%C3%B3n_de_la_Educaci%C3%B3n

9. La Educación obligatoria en México. informe 2019. In Instituto Nacional para la Evaluación de la educación. [Online].; 2019. Available from: https://www.inee.edu.mx/wp-content/uploads/2019/04/P1I245.pdf

10. Nessier A, Pagura M, Pacifico A, Zandomeni N. ESTUDIANTES UNIVERSITARIOS QUE TRABAJAN: DESAFÍOS DE LA SIMULTANEIDAD.

11. Garbanzo G. Factores asociados al rendimiento académico en estudiantes universitarios, una reflexión desde la calidad de la educación superior pública. Revista Educación. 2007; 31(1).

12. Vázquez L. ¿Estudias y trabajas? Los estudiantes trabajadores de la Universidad Autónoma Metropolitana, Unidad Azcapotzalco. Revista Latinoamericana de Estudio. 2009; 39(3-4): p. 121-149.

13. Montes I, Lerner M. Perspectiva cuantitativa. [Online].; 2011. Available from: http://www.eafit.edu.co/institucional/calidadeafit/investigacion/Documents/Rendimiento%20Ac%C3%A1demicoPerrspectiva%20cuantitativa.pdf

14. Boucourt, González. Perfil socioeconómico y demográfico. Revista Venezolana de Ciencias Sociales. 2002; 10(01): p. 86-105.

15. Santibáñez. Lo que no te dicen sobre trabajar y estudiar al mismo tiempo, UNITEC-Universidad Tecnológica de México. [Online]. 2022. Available from: https://blogs.unitec.mx/empleo/lo-que-no-te-dicen-de-trabajar-y-estudiar/.

16. Bracho L. FACTORES DEMOGRÁFICOS Y SU RELACIÓN CON EL DESEMPEÑO ACADÉMICO Y SATISFACCIÓN DE LOS ESTUDIANTES CON LA INSTITUCIÓN. La Universidad del Zulia. 2022 Julio; 7(01): p. 60-88.

17. Toukoumidis G. Estudiar y trabajar: revisa los pros y contras de combinarlo, Hotcourses Latinoamerica. [Online].; 2023. Available from: https://www.hotcourseslatinoamerica.com/study-abroad-info/careers-prospects/es-beneficioso-combinar-trabajo-y-estudio/

18. Olivos J. Estudiar, trabajar y tener vida al mismo tiempo, Instituto para el futuro de la educación. [Online].; 2022. Available from: https://observatorio.tec.mx/edu-bits-blog/estudiar-trabajar-y-tener-vida-al-mismo-tiempo/

19. studentcaffe. Cómo mantener un trabajo durante el transcurso de los estudios, studentcaffe. [Online].; 2018. Available from: http://studentcaffe.com/preparate/estudiantes-adultos-reingreso/mantener-trabajo-durante-transcurso-estudios?lang=es

20. Carrillo S, Ríos J. Trabajo y rendimiento escolar de los estudiantes universitarios. El caso de la Universidad de Guadalajara, México. Revista de la educación superior SciElo. 2013 abr/junio; 42(166).

21. Hernández D. Los impactos de becas en tres ámbitos de la educación en México: no hay una bala de plata para todos ni para todo. [Online].; 2023. Available from: https://egobiernoytp.tec.mx/es/blog/los-impactos-de-becas-en-tres-ambitos-de-la-educacion-en-mexico-no-hay-una-bala-de-plata-para

22. Cárdenas J, Pesantez F, Vintimilla S. Estrés en estudiantes ¿cómo afecta a su Salud?, Programa UPSalud. [Online].; 2024. Available from: https://dspace.ups.edu.ec/bitstream/123456789/27458/1/Estr%C3%A9s%20en%20estudiantes.%20%C2%BF%C3%B3mo%20afecta%20a%20su%20salud-.pdf.

** English translation of the original article published in Ecuacientífica, Vol. 1, No. 2, pp. 77-94.*