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AUTORRETENCIÓN COMO ESTRATEGIA EN LA GESTIÓN FINANCIERA DE CONCESIONARIAS DE VEHÍCULOS EN ECUADOR

SELF-WITHHOLDING AS A STRATEGY IN THE FINANCIAL MANAGEMENT OF VEHICLE DEALERSHIPS IN ECUADOR

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RESUMEN

La Ley Orgánica de Urgencia Económica y Generación de Empleo estableció un porcentaje obligatorio de autorretención del impuesto a la renta para los grandes contribuyentes, lo que ha generado desafíos financieros para las empresas. El problema de investigación se centra en cómo esta medida afecta la liquidez y rentabilidad de las concesionarias. El objetivo principal es determinar el impacto de la autorretención en la gestión financiera de una concesionaria de vehículos específica. Para ello, se realizó una investigación exploratoria y descriptiva, utilizando tanto datos observacionales como cuestionarios aplicados a las concesionarias, se analizaron los porcentajes de autorretención y sus efectos en los flujos de caja, el endeudamiento y la rentabilidad de las empresas. Los resultados indican que la autorretención ha causado un incremento significativo en los pagos de impuestos, con un aumento mensual superior al 45% en comparación con el año anterior. Esto ha afectado negativamente la gestión financiera, llevando a cortes de personal, disminución en la capacidad de inversión, y aumento de deudas. La empresa investigada solicitó una reducción del porcentaje de autorretención, lo que fue aceptado por el Servicio de Rentas Internas, disminuyendo el porcentaje del 2,25% al 1,25%. En conclusión, aunque la autorretención es una herramienta eficaz para la recaudación fiscal, tiene un impacto adverso en la liquidez y rentabilidad de las concesionarias, lo que sugiere la necesidad de ajustes en la política fiscal para mitigar sus efectos negativos en el sector.

Palabras clave

Autorretención, gestión financiera, impacto económico, impuestos, rentabilidad, liquidez

ABSTRACT

The Organic Law of Economic Urgency and Job Creation established a mandatory percentage of self-retention of income tax for large taxpayers, which has generated financial challenges for companies. The research problem focuses on how this measure affects the liquidity and profitability of dealerships. The main objective is to determine the impact of self-retention on the financial management of a specific vehicle dealership. To

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do this, an exploratory and descriptive research was carried out, using both observational data and questionnaires applied to the dealerships. The self-retention percentages and their effects on cash flows, indebtedness and profitability of companies were analyzed. The results indicate that self-retention has caused a significant increase in tax payments, with a monthly increase of more than 45% compared to the previous year. This has negatively affected financial management, leading to staff cuts, decreased investment capacity, and increased debt. The company under investigation requested a reduction in the withholding percentage, which was accepted by the Internal Revenue Service, decreasing the percentage from 2.25% to 1.25%. In conclusion, although withholding is an effective tool for tax collection, it has an adverse impact on the liquidity and profitability of concessionaires, suggesting the need for adjustments in fiscal policy to mitigate its negative effects on the sector.

Keywords

Self-retention, financial management, economic impact, taxes, profitability, liquidity

INTRODUCTION

In Ecuador, in 2024, Resolution NAC-DGERCGC24-00000030 was approved, which regulates the payment of income tax self-withholding for large taxpayers, with the objective of collecting greater revenues for the State. This tax negatively impacts large taxpayers because the established percentage is higher than the tax actually incurred.

Companies must improve their financial planning to avoid running out of cash flow, maintain good negotiation relationships, and ensure that their profitability is not affected. It is necessary to evaluate the impact of self-withholding, as one of the main effects is the decrease in liquidity resulting from the monthly payment of the amount to the State, which causes a reduction in profitability.

In Ecuador, the Internal Revenue Service (SRI) establishes income tax and VAT as mechanisms to obtain revenues with which it manages public works. It also designates withholding agents who are responsible for collecting a percentage of VAT and income tax withholding according to the taxpayer's classification.

The concept of income refers to everything related to the economic sphere; it is the most efficient tax for financing the State. The burden of this tax is distributed among the inhabitants, who are called taxpayers, and is distributed according to the contributory capacity of the natural person or company (1). Income tax in Ecuador is understood as the tax on income obtained by natural or legal persons within a given period. The Internal Tax Regime Law defines it as a tax on the global income obtained by natural persons, undivided estates, and national or foreign companies, in accordance with the provisions of the Law (2).

Withholding at source implies that a portion of the payment that an entity makes to a third party, whether for salaries, fees, rents, dividends, or other concepts, is withheld at the time the payment is made and remitted directly to the tax authority (3).

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Companies and natural persons classified as Large Taxpayers must perform a monthly self-withholding of Income Tax on the total of their taxable income obtained within that month, excluding those that were already subject to withholding (4).

The self-withholding percentage will be that established by the Internal Revenue Service based on the effective tax rate determined in the control processes according to its habitual economic activity. This will constitute a tax credit at the time of settling their income tax (4).

Financial management is defined as the accounting process in which transactions and adjustments are recorded, with the purpose of reporting financially to management, shareholders, or users on the financial performance of the business, fundamentally in its profitability and liquidity (5).

Financial management is also understood as the results of the needs to have quantitative information available on the different benefits obtained for the performance of economic activities for decision-making regarding the financial situation of a company, in fulfillment of its financial objectives, which allows its growth (6).

There is a series of dimensions that primarily determine financial management, which imply a consistent relationship with the supply of cash and its movement. Likewise, it is necessary to take into account the financial situation of the company, which is fundamentally determined by: financial means, which refer to all those aspects or factors that can determine the means to execute financing, implying a financial decision regarding bank credits, commercial credits, and occasionally partner contributions (7).

Financial tools refer to the set of essential tools that allow knowledge of the financial and economic situation, with the purpose of having an overview of the assets and liabilities that the company has, as well as income and expenses, and also financial projections. Financing indicators are based on the economic and financial measurement of the company, through quantitative and representative knowledge of the company, often at the level of liquidity, profitability, and indebtedness, among other indicators (8).

The self-withholding percentages established by the SRI for the months of January to June present unfavorable observations for companies because the payment for self-withholding has been greater than what was actually incurred. This had effects on the financial management of the companies, as liquidity problems arose. For this reason, a claim was filed with the SRI with supporting evidence, which allowed the Internal Revenue Service to issue a favorable ruling establishing a lower self-withholding percentage.

Large taxpayers will have to face problems that affect their cash flow, and many will have to process tax claims to obtain a refund of amounts paid beyond the fair legal measure, an effect that will be generated by the current self-withholding percentage and the ISD paid during the fiscal year (9).

The self-withholding mechanism has generated a significant injection of liquidity for the tax authority. However, the companies that are part of these large groups, including

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automotive, banking, commercial, manufacturing, oil, mining, and cement companies, among others, express dissatisfaction.

This dissatisfaction arises because it generates a loss of capital or liquidity for the entire annual operation; for example, an automotive sector company that has a 2.5% self-withholding rate must self-withhold USD 4.7 million. However, the tax incurred in 2023 minus the tax credit was USD 600,000 (10).

Based on this information, self-withholding will also bring negative effects for the State, which at the end of the year will have to refund excess payments. Therefore, the objective of this research is to determine the impact on Financial Management produced by self-withholding in a vehicle dealership.

MATERIALS AND METHODS

For the design of the methodology, an exploratory and descriptive research was proposed. For the exploratory research, a preliminary evaluation of the effects of self-withholding on the financial management of vehicle dealerships in Ecuador was considered. The descriptive research seeks to determine and characterize the effects of self-withholding on key financial variables such as liquidity, profitability, and indebtedness.

For data collection, a combination of primary and secondary sources was used. A reliable database was chosen, such as Scopus, Latindex, DSpace, Web of Science, Google Scholar, and sources consisting of texts, generic studies such as manuals, analytical reviews, and resolutions issued by the Internal Revenue Service (SRI), in order to obtain adequate information for this study.

The data obtained were analyzed using descriptive statistics. Additionally, for the compilation of information, an analysis of 35 documents was considered, of which only 22 were selected as they provided important and relevant information for carrying out the respective analysis of the study. For better understanding, tables and a brief description were used to facilitate comprehension.

RESULTS

In Ecuador, taxes are one of the main sources of revenue that help finance public works and services. Due to the economic crisis, in December 2023, through the Organic Law of Economic Urgency and Job Creation, with the objective of strengthening the fight against evasion and in accordance with good international practices in tax matters, the SRI created the National Directorate of Large Taxpayers, which will allow strengthening the specialized exercise of tax faculties, in observance of the constitutional principles that govern public administration and the Ecuadorian tax regime.

In Resolution NAC-DGERCGC24-30, the SRI established the self-withholding percentages for companies considered large taxpayers. From the list, information from some vehicle dealerships in the country has been taken:

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Table 1. Self-withholding percentages for companies considered large taxpayers

RUC	Current Business Name	Large Taxpayer Attribution Office	Province	% Self-withholding	New % Self-withholding
1792073634001	TOYOTA DEL ECUADOR S.A.	NAC-GCFOIOC21-0000950-E	PICHINCHA	1.25	1.25
1890010705001	AMBACAR CIA. LTDA.	NAC-GCFOIOC21-00000914-E	TUNGURAHUA	2.25	2.25
0990022011001	MAQUINARIAS Y VEHICULOS S.A. MAVESA	NAC-GCFOIOC21-00000902-E	GUAYAS	1.25	1.25
1790009289001	ASIAUTO S.A	NAC-GCFOIOC21-00000964-E	PICHINCHA	1.25	1.25
1790009289001	AUTOMOTORES CONTINENTAL S.A.S	NAC-GCFOIOC21-00001229-E	PICHINCHA	1.25	1.25
18917156640001	AUTOMEKANO CIA. LTDA.	NAC-GCFOIOC21-00001064-E	TUNGURAHUA	2.25	1.25
0990014094001	INDUAUTO S.A.	NAC-AGCOGEC22-00000773-M	GUAYAS	2.25	1.25
1890000130001	ASSA-AUTOMOTORES DE LA SIERRA S.A.	NAC-AGCOGEC22-00000774-M	TUNGURAHUA	1.25	1.25
1891724612001	VEHICENTRO VEHICULOS Y CAMIONES CENTRO SIERRA S.A	NAC-ADROGEC23-00001277-M	TUNGURAHUA	4.00	2.59
1792231116001	AUTOSHARECORP S.A	NAC-GCFOIOC21-00001050-E	GUAYAS	2.25	2.25
18917483376001	CIUDAD DEL AUTO CIAUTO CIA. LTDA.	NAC-ADROGEC24-00000539-M	TUNGURAHUA	0.00	2.15

Source: (5)

Most of the companies in Table 1 are distributed among three provinces: Pichincha, Tungurahua, and Guayas. This suggests that these regions concentrate a large number of large taxpayers, which is consistent with their role in the Ecuadorian economy, as they are key areas in terms of production and trade. Stable Self-Withholding Rates: For several companies, such as Toyota del Ecuador S.A., Maquinarias y Vehículos S.A. MAVESA, Asiauto S.A., and Automotores Continental S.A.S., the same self-withholding rate of 1.25% is maintained. This could indicate that these companies have not experienced variations in their capacity to meet tax obligations and maintain stability in their fiscal contribution.

An interesting case is that of Automekano Cía. Ltda., whose self-withholding rate is reduced from 2.25% to 1.25%. This could reflect an improvement in its administrative or financial processes that allows it to optimize its tax burden, or an adjustment in the fiscal policies applicable to the company. The company Ciudad del Auto CIAUTO Cía. Ltda. is an atypical case, as it went from a self-withholding of 0% to a new value of 2.15%. This substantial increase may be due to a change in its classification as a large taxpayer or to

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the fulfillment of certain tax criteria that require it to make withholdings at a much higher percentage.

Some companies present small modifications in their self-withholding percentages, such as Vehicentro Vehículos y Camiones Centro Sierra S.A., which goes from a withholding of 4.00% to 2.59%. Although the reduction is notable, it still maintains one of the highest rates in the table, which could be related to the volume of operations or the nature of its economic activity.

Large taxpayers are those companies or natural persons considered as such by the SRI due to their fiscal importance and the size of transactions in their respective sectors, and who merit special attention and treatment by the Tax Administration. The large taxpayer segment covers strategic, productive, commercial, financial, and service sectors. In the country, 720 taxpayers were catalogued as large taxpayers, consisting of 520 companies and 200 natural persons who represent more than 50% of the country's tax collection.

The SRI, through a public registry, published the list of the 520 companies considered large taxpayers. Natural persons do not appear on this list due to the data protection law. Natural persons, for their identification, must include the legend "large taxpayer" on the invoice.

Below, Figure 1 is presented with the number of large taxpayers by province:

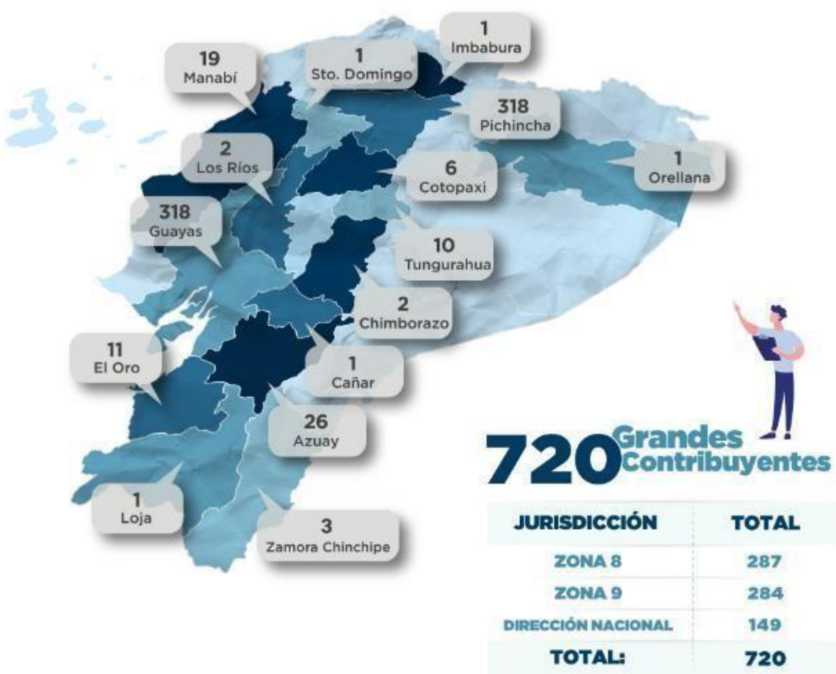

Figure 1. Large taxpayers by province

Source: (20)

Through Resolution No. NAC-DGERCGC24-00000003, the self-withholding percentages were established based on certain criteria such as the volume and relevance of their transactions, risk variables, and/or tax or economic relevance.

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In the case of the dealership selected for the research, the SRI initially established a 2.25% self-withholding rate; however, this percentage was considered excessive and did not adequately reflect the economic reality of the company. Due to these discrepancies, a law firm intervened to assist the affected companies and reduce the self-withholding percentage.

After reviewing the claim, the Internal Revenue Service (SRI) accepted the request and, as of July, a reduction to 1.25% self-withholding was implemented, which allowed the company better management of its tax obligations and greater financial stability.

To evidence the results of the research, a summary table has been prepared where the increase in tax payments can be observed.

Table 2. Increase in tax payments

Month	Company	Withholdings 2023	Self-withholding 2024	Difference	Increase %
January	Dealership	$ 75,853.80	$ 112,103.61	$ 36,249.81	47.79%
February	Dealership	$ 161,248.24	$ 233,604.81	$ 72,356.57	44.87%
March	Dealership	$ 250,171.89	$ 451,590.25	$ 201,418.36	80.51%
April	Dealership	$ 306,597.68	$ 547,151.32	$ 240,553.64	78.46%
May	Dealership	$ 376,513.20	$ 672,732.47	$ 296,219.27	78.67%
June	Dealership	$ 469,448.32	$ 740,745.88	$ 271,297.56	57.79%
TOTAL		**$ 1,639,833.13**	**$ 2,757,928.34**	**$ 1,118,095.21**	

Source: (20)

As can be observed in Table 2, the amounts paid to the State in the current year compared to the previous year have increased by more than 45% monthly, which causes problems for companies, especially in financial management.

Due to self-withholding, the dealership faces difficulties in financial management that are evidenced in the following situations: due to the economic situation, in the month of January the company carried out staff cuts as a result of the lack of liquidity and decrease in sales; another problem faced by financial management is the decrease in profitability due to excess payment of self-withholding; lack of money to invest and develop new products or services; and the increase in debts with financial institutions to meet obligations with suppliers and employees. It can be clearly evidenced that self-withholding affects financial management; according to the data obtained, in 2024, USD 1,118,095.21 more was paid to the tax authority than the previous year, which represents 64.69%.

DISCUSSION

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The classification as large taxpayers may be applied to natural persons and/or companies that represent, as a whole, at least 50% of tax collection. For this purpose, the Internal Revenue Service may use any of the following criteria, through methodologies or mathematical or statistical models, executed on an annual basis:

a) The volume and relevance of their transactions; the contribution to tax collection; and/or the behavior of the economic sector to which they belong; information that may be analyzed from at least the last five fiscal years.

b) The amount of equity declared by the taxpayer or estimated by the Tax Administration.

c) Other criteria established by the Tax Administration itself, related to risk variables and/or tax or economic relevance. (SRI, 2024) (14).

The self-withholding percentage will be that established by the Internal Revenue Service based on the effective tax rate determined in the control processes according to its habitual economic activity.

The opposite occurs with the tax authority, as the data obtained on revenues from January to July in the country from self-withholding have increased; however, this may be detrimental in the future as companies will request refunds of excess or undue payments.

In Figure 2 below, we can review the increase in revenues collected by the State due to self-withholdings.

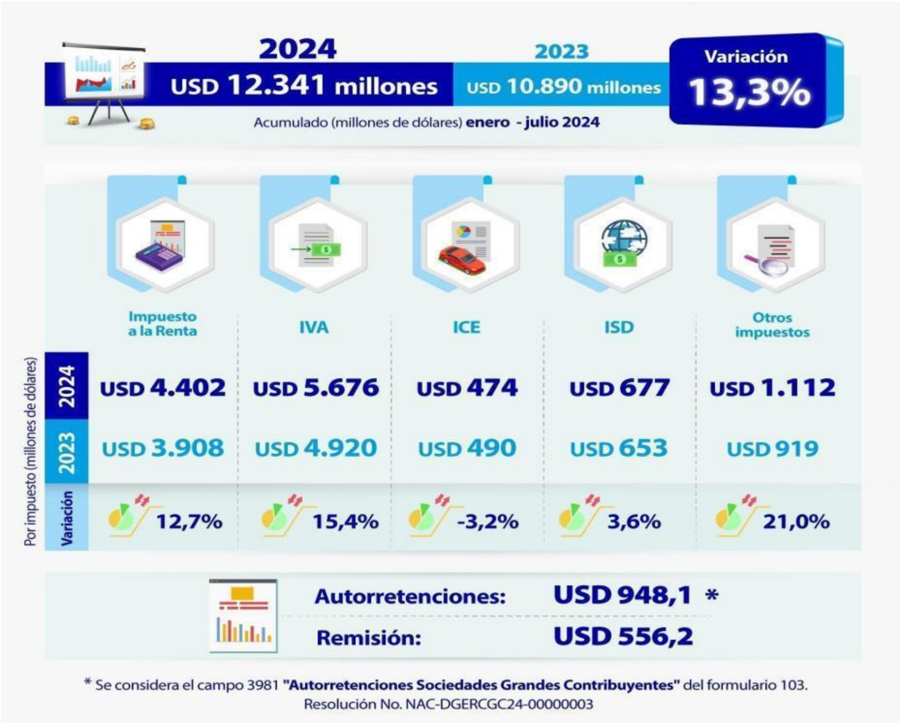

Figure 2. Increase in revenues collected by the State

Source: (14)

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As companies approach higher levels of the tax payment distribution, a negative and significant relationship is evidenced with the growth rate of earnings, non-current assets, and number of employees (15).

In several Latin American countries, tax withholding and self-withholding policies have been effective tools for increasing tax collection. However, the authors also highlight that, when not adjusted to the economic reality of companies, these measures can result in a decrease in profitability and an increase in the financial burden for companies.

This is consistent with the results obtained in the case of vehicle dealerships in Ecuador, where it is observed that self-withholding has generated a 45% increase in monthly payments to the State, which has led to staff layoffs and a decrease in the profitability of the companies (16).

The main disadvantages of self-withholding are that, by imposing an additional tax burden on large taxpayers, it can diminish their capacity to invest in new technologies or expand their operations. This is reflected in the case of the dealership under investigation, which experienced financial difficulties due to the lack of liquidity to invest in new products or services, as well as an increase in debts with financial institutions. This negative impact on financial management is a critical point that must be considered in future tax policies in the country (17).

Cabrera's literature review also suggests that self-withholding policies can generate tensions in specific sectors of the economy, particularly in those that depend on constant investments to remain competitive.

Cabrera argues that companies in the automotive sector often have tight profit margins, and a sudden increase in taxes, as evidenced by the results of this research, can destabilize their financial situation. In this sense, the adjustment of self-withholding from 2.25% to 1.25% in some dealerships reflects an attempt by the SRI to mitigate these effects, but the data demonstrate that the tax burden still remains a challenge for these companies (18).

Comparison with other countries shows that self-withholding is a mechanism used in contexts of economic crisis to ensure tax collection, as mentioned by Jiménez, who studied the application of similar policies in Brazil. According to the author, Brazilian companies also faced similar difficulties, such as a reduction in liquidity and investment capacity, which forced some sectors to resort to loans to cover their fiscal obligations.

This parallel with the Ecuadorian case indicates that, while self-withholding may be effective for increasing collection in the short term, it can also negatively affect the competitiveness of companies if it is not adjusted to their economic capacities (19).

Companies that operate in high-capital sectors, such as the automotive sector, need to have contingency plans when tax changes of this magnitude are implemented (20). The authors argue that the lack of preparation for policies such as self-withholding can generate excessive dependence on indebtedness with financial entities, which aligns with

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the findings of this study, where the dealership under investigation had to resort to external financing to meet its obligations with suppliers and employees (21).

Companies facing an increase in their tax obligations often resort to staff reduction as one of the first measures to adjust their operating expenses. This is clearly reflected in the case of the dealership under investigation, which reduced its workforce in January 2024 due to the lack of liquidity caused by the increase in payments to the State (22).

For their part, Salazar and Martín propose that companies affected by self-withholding policies should seek specialized tax advice to optimize their tax situation. In this context, it is important to highlight the role played by a law firm in the case of the dealership under investigation, which managed to reduce the self-withholding percentage from 2.25% to 1.25%. This intervention allowed the company to alleviate part of the tax burden, although the results indicate that the impact on financial management remains significant (23).

It is important to mention that the literature also points to the need for greater flexibility in the application of tax policies. (24) highlights that, in countries where self-withholding policies are implemented, it is essential that tax authorities consider the particularities of each economic sector. In this sense, the application of a standard self-withholding percentage for all vehicle dealerships in Ecuador may not be the best strategy, as not all companies have the same financial capacity to assume these additional costs.

The results of this research coincide with the findings of (25), who point out that, although self-withholding can be an effective tool to combat tax evasion, it must be applied carefully so as not to compromise the financial viability of companies. The 64.69% increase in payments to the tax authority recorded in the case of the Ecuadorian dealership under investigation is a clear example of how a poorly adjusted tax policy can have negative repercussions on the financial stability of a company.

CONCLUSIONS

Self-withholding can lead to a significant restriction of the liquidity available to the company, limiting the capacity to respond quickly to unforeseen needs or emergencies. This reduction in financial flexibility affects efficiency in resource management. It is a key component of the tax system in Ecuador, especially for vehicle dealerships that must comply with specific requirements for tax withholding. A correct understanding and application of the regulations is essential to ensure tax compliance and avoid sanctions.

Based on the data obtained, self-withholding complicates the financial management of companies by introducing uncertainty around cash flows. The company must anticipate and reserve funds to meet its tax obligations, causing cash flow projections to be less accurate, and limiting its capacity to invest in operations, growth projects, or to face unforeseen expenses.

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It is recommended that additional studies be conducted to explore how self-withholding affects different types of economies and fiscal structures, and to identify strategies that can mitigate the associated negative impacts.

BIBLIOGRAPHIC REFERENCES

1. John M, Luz P, Juan S, Ludivia Hernández. Analytical review of income tax on natural persons: an analysis in Brazil, Peru and Colombia. 2021 February.

2. Organic Law of the Internal Tax Regime Ecuador: Official Registry Supplement 463; 2017.

3. Vargas P. Manual and guide of good accounting and tax practices for legal persons Bogotá: Universidad Santo Tomas; 2023.

4. Resolution No. NAC-DGERCGC24-00000003 Payment of Self-Withholdings Ecuador: Internal Revenue Service-SRI; 2024.

5. Internal Revenue Service. Resolution No. NAC-DGERCGC24-00000024 Ecuador: Internal Revenue Service; 2024.

6. Huacchillo L, Ramos E, Pulache J. Financial management and its impact on financial decision-making Lima: Universidad y Sociedad; 2020.

7. Hanni A. Accounting practices Mexico: Grupo Editorial Patria; 2017.

8. Chapi P, Ojeda C. General Business Chart of Accounts and Financial Statements. 1st ed. Lima: FFECAT; 2018.

9. Gabriel V. Tax effect of self-withholdings on large taxpayers. 2024 Mar.

10. El Universo. Self-withholding has changes, but dissatisfaction of large taxpayers over the rates continues. 2024 Jul.

11. Corona L, Fonseca M. Hypotheses in the research project: when yes, when no? Cuba: Medisur; 2023.

12. Sánchez D. Data collection techniques and instruments in research. 9th ed. Río BCdIESTd, editor. Puebla: TEPEXI; 2022.

13. Hernández S, Duana D. Data collection techniques and instruments: Scientific Bulletin of the Economic Administrative Sciences of ICEA; 2020.

14. Internal Revenue Service. RESOLUTION No. NAC-DGERCGC21-00000022 Criteria for determining large taxpayers Ecuador: SRI; 2024.

15. Gallardo A, Burgos Y. Impact of income tax and business performance Ecuador: Revista Cuestiones Económicas; 2020.

16. Cottarelli C, Guerguil M. Fiscal policy and the fight against tax evasion. Econ J Latam. 2018;45(3):123-145.

17. González J. The impact of self-withholding on the private sector: Case study. Rev Fin Econ. 2019;27(2):89-104.

Ecuacientífica
ISSN: 3091-1796
Vol. 2, No. 3, PP. 7-19
Enero 2024

18. Cabrera F. The tax burden in the automotive sector: A critical look. Gest Financ. 2020;35(4):215-230.

19. Jiménez L. Self-withholding and economic growth in Brazil: Lessons for Latin America. Desar Econ. 2021;52(1):74-89.

20. Internal Revenue Service. Economic information of the dealership [Internet]. Quito: SRI; 2024.

21. Gálvez A, Torres M. Preparation for tax changes: the case of the automotive sector. Rev Econ Emp. 2022;39(3):147-160.

22. Mendoza R. Tax policies and employment: The impact of the tax burden on the labor market. Investig Trab. 2023;18(2):205-220.

23. Salazar G, Martín A. Tax optimization in times of crisis: strategies for large taxpayers. Trib Emp. 2021;23(4):173-190.

24. Fernández P. Flexibility in tax policy: a sectoral approach. Rev Polit Econ. 2022;50(2):134-150.

25. Aguirre D, Espinoza L. Self-withholding and its effects on business competitiveness. Desafíos Fin. 2023;19(1):67-81.

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CAMBIOS EN EL COMPORTAMIENTO DEL CONSUMIDOR DEBIDO AL INCREMENTO DE LA INFLACIÓN

CHANGES IN CONSUMER BEHAVIOR DUE TO THE INCREASE IN INFLATION

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RESUMEN

El presente estudio analiza cómo el incremento de la inflación afecta el comportamiento del consumidor, específicamente en las decisiones de compra y ahorro. Ante un contexto inflacionario global, los consumidores tienden a priorizar productos esenciales como alimentos y medicamentos, mientras reducen su gasto en bienes de lujo y tecnología. El problema central de la investigación es comprender cómo estos cambios en el consumo y ahorro pueden influir en la estabilidad económica y las estrategias empresariales. El objetivo de este estudio es analizar cómo el incremento de la inflación influye en las decisiones de compra y los comportamientos de ahorro de los consumidores. A través de un enfoque cuantitativo, el estudio busca identificar los cambios en las prioridades de consumo, especialmente en la adquisición de productos esenciales frente a bienes de lujo o no esenciales. Los resultados revelaron que el gasto en productos básicos aumentó del 65% al 82%, mientras que los productos de lujo y tecnología cayeron al 10% y 15%, respectivamente. Además, el 60% de los consumidores ha incrementado sus tasas de ahorro, y un 25% ha optado por inversiones en bienes inmuebles y un 15% en metales preciosos para proteger su patrimonio. Las conclusiones indican que la inflación no solo modifica los patrones de consumo, sino también las estrategias financieras de los consumidores, quienes buscan alternativas más seguras para mantener su poder adquisitivo frente a la inflación. Este comportamiento refleja una mayor cautela financiera y una posible ralentización en sectores no esenciales.

Palabras clave
Planificación financiera, comportamiento adaptativo, inversión segura, poder adquisitivo

ABSTRACT

This study analyzes how rising inflation affects consumer behavior, specifically in purchasing and saving decisions. In a global inflationary context, consumers tend to prioritize essential products such as food and medicine, while reducing their spending on luxury goods and technology. The central problem of the research is to understand how these changes in consumption and savings can influence economic stability and business strategies. The objective of this study is to analyze how rising inflation influences

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consumer purchasing decisions and saving behaviors. Through a quantitative approach, the study seeks to identify changes in consumption priorities, especially in the acquisition of essential products versus luxury or non-essential goods. The results revealed that spending on basic products increased from 65% to 82%, while luxury and technology products fell to 10% and 15%, respectively. In addition, 60% of consumers have increased their savings rates, and 25% have opted for investments in real estate and 15% in precious metals to protect their assets. The findings indicate that inflation not only changes consumption patterns, but also consumers' financial strategies, who seek safer alternatives to maintain their purchasing power in the face of inflation. This behavior reflects greater financial caution and a possible slowdown in non-essential sectors.

Keywords

Financial planning, adaptive behavior, safe investment, purchasing power

INTRODUCTION

The rise in prices and inflation are economic phenomena that affect societies in a profound and multifaceted manner. In a global context where inflation rates have shown a significant increase, understanding how these economic conditions influence consumer behavior becomes essential for formulating effective policies. Inflation not only impacts the cost of living, but also alters purchasing decisions and the savings strategies of individuals (1).

This study focuses on analyzing how the increase in prices affects consumers’ purchasing decisions and savings behavior. As the prices of goods and services rise, consumers tend to adjust their consumption habits, prioritizing essential products and modifying their savings patterns.

Through a quantitative approach, the aim is to provide a clear and up-to-date view of these dynamics, which are crucial for understanding the long-term economic repercussions. The findings of this research are relevant not only for academics and economists, but also for policymakers seeking to mitigate the adverse effects of inflation on citizens’ daily lives (2).

Inflation not only affects product prices, but also erodes the purchasing power of the currency. This means that, with the same amount of money, consumers can acquire fewer goods and services than before, which generates a reduction in purchasing capacity. Furthermore, the impact of inflation may vary according to different income levels.

For lower-income households, inflation can be more detrimental, since a greater proportion of their income is allocated to essential products, such as food and housing, which are usually the most affected by price increases (3).

Another relevant factor is expected inflation. If consumers believe that prices will continue to rise, they may choose to bring forward their purchases, which can increase demand in the short term and exert additional pressure on prices. On the other hand, in contexts of high inflation, it is common for people to seek refuge in assets that maintain their value

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over time, such as real estate, gold, or foreign currencies, in an attempt to protect their savings from depreciation (1).

Savings decisions are also altered. In an inflationary environment, the real interest rate (the difference between the nominal interest rate and the inflation rate) tends to be low or negative, which discourages saving in traditional instruments, such as bank accounts or fixed-term deposits. Consumers, instead of saving in cash, may choose to spend more quickly or invest in assets they consider less vulnerable to inflation (4).

Likewise, inflation can have effects on long-term economic stability. If it is not adequately controlled, it can generate uncertainty in markets, affect investment, and foster more restrictive economic policies, such as increases in interest rates, which in turn can affect access to credit and economic growth (5).

Inflation has led to a change in purchasing habits, with 70% of consumers prioritizing essential products and opting for more economical alternatives. Among the main trends are the preference for generic brands, the reduction in consumption of non-essential goods, and the search for discounts and promotions. Consumers have also modified their behavior by adopting more conscious purchases, better planning their expenses, and reducing waste, which reflects greater attention to value and budget management (6).

The economic uncertainty caused by inflation has driven many consumers to modify their financial strategies, increasing their savings rates as a precautionary measure against price volatility. Approximately 60% of consumers have chosen to save more, seeking to protect themselves against future increases in the cost of living or possible economic emergencies.

This increase in savings also reflects a shift toward greater financial caution, with people allocating a larger proportion of their income to cash reserves or safe investments, rather than spending on non-essential goods and services (7).

This behavior can be explained by the growing need of consumers to protect their purchasing power in an inflationary environment. As prices rise in a sustained manner, the real value of saved money decreases, which generates a legitimate concern about the long-term loss of purchasing power.

To counteract this effect, many consumers choose to increase their savings levels, not only as a form of precaution against economic volatility, but also as a strategy to have a financial cushion against possible future price fluctuations (8).

However, this conduct also reflects a paradox: although saving is a protective measure, money held in cash or in low-yield accounts loses value in the face of inflation. As a result, some consumers are seeking ways to diversify their savings by investing in assets that can better protect against inflation, such as real estate, precious metals, or inflation-indexed financial products. This phenomenon highlights the importance of financial planning in times of uncertainty, where balancing savings, consumption, and investment becomes crucial to maintain purchasing power (6).

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The phenomenon of the decrease in aggregate demand is particularly concerning when observed in sectors such as luxury, leisure, entertainment, technology, and retail. These sectors depend heavily on consumers' discretionary spending, that is, those expenditures that are not considered strictly necessary.

When people are forced to prioritize essential products such as food, housing, and energy due to the rise in prices, the non-essential goods sectors experience a drop in their revenues. This can lead to a slowdown in production, which negatively impacts Gross Domestic Product (GDP) growth and can generate a domino effect on other sectors of the economy (9).

At the business level, companies operating in these sectors are forced to react quickly to the new reality of a more cautious consumer who is less willing to spend. To remain competitive in an inflationary environment, companies may be forced to make strategic adjustments on several fronts.

One of the first changes usually occurs in the price structure. Faced with lower demand and the increase in production costs (also affected by inflation), many companies attempt to absorb part of the cost increases or offer lower-priced products to attract consumers concerned about their purchasing power (10).

The objective of this study is to analyze how the increase in inflation influences consumers' purchasing decisions and savings behaviors. Through a quantitative approach, the study seeks to identify changes in consumption priorities, especially in the acquisition of essential products versus luxury or non-essential goods, and how consumers adjust their savings strategies to protect their purchasing power. Likewise, the growing concern of consumers regarding inflation and the strategies adopted are examined, such as the diversification of savings into assets that offer greater protection against inflation, which reveals a change in financial management and long-term planning.

MATERIALS AND METHODS

Research Design:

The study will adopt a quantitative approach to analyze how the rise in prices influences consumers' purchasing decisions and savings behavior. This design allows the collection of numerical data and the application of statistical analyses to identify patterns and relationships.

Population and Sample:

The study population is composed of consumers from various regions of the country. A representative sample will be selected, using stratified random sampling to ensure that different socioeconomic and demographic groups are adequately represented.

Instruments:

A structured questionnaire will be used as the main data collection instrument. This questionnaire will include sections on:

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Purchasing habits: Types of products acquired, frequency of purchase, and changes in purchasing decisions.

Savings behavior: Savings rate, savings methods, and reasons for increasing or decreasing savings.

Perceptions of inflation: Level of concern, expectations about prices, and their impact on daily life.

Procedure:

a) Questionnaire development: The questionnaire will be designed and validated, ensuring that the questions are clear, relevant, and understandable for the participants.

b) Data collection: The questionnaire will be distributed both online and in physical format, reaching different communities and demographic groups. Social networks, emails, and community events will be used to maximize participation.

c) Informed consent: Participants will be informed about the purpose of the study, guaranteeing the confidentiality of their responses and requesting their consent to participate in the research.

Data Analysis:

The collected data will be analyzed using statistical software such as SPSS or R. Descriptive techniques will be applied to summarize the characteristics of the sample, and inferential analyses, such as correlation and regression tests, will be used to identify significant relationships between variables. The results will be presented in tables and graphs to facilitate the interpretation and discussion of the findings.

This methodological approach will make it possible to obtain a solid and quantifiable understanding of the impact of inflation on consumer behavior, thereby contributing to the existing literature on the subject.

RESULTS

The results of the research are presented below, organized into key sections that reflect the findings on the impact of the rise in prices on consumer behavior.

Table 1. Changes in the type of products acquired due to inflation

Product	Percentage before inflation	Percentage after inflation
Basic products (food, medicines)	65%	82%
Luxury products	25%	10%
Technology and entertainment	30%	15%

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Table 1 reflects a clear change in consumers' purchasing priorities due to inflation. Before a generalized increase in prices occurred, 65% of respondents would acquire basic products, while a considerable percentage was invested in luxury products (25%) and technology or entertainment (30%). However, after inflation, spending on basic products has increased to 82%, which indicates a prioritization of essential items such as food and medicines. This can be explained because these products are not easily substitutable and, therefore, become a priority in times of economic crisis.

Spending on luxury and technology products has decreased, with a reduction to 10% and 15%, respectively. This suggests that, when consumers' purchasing power is threatened, spending on non-essential items is the first to be cut. Companies in these sectors may be affected by the drop in demand, which could generate an impact on production and, consequently, on GDP growth. In addition, this adjustment in purchasing decisions also reveals that consumers are seeking strategies to maximize the value of their money, opting for more economical products or postponing non-essential purchases.

Table 2. Savings methods adopted by consumers in an inflationary context

Savings method	Percentage of use
Savings accounts	45%
Investments in real estate	25%
Purchase of precious metals	15%
Inflation-indexed investments	10%
Others	5%

The diversification of savings strategies in times of inflation is evident in Table 2. Although savings accounts remain the predominant option for 45% of consumers, it is notable that a significant proportion of them are seeking refuge in safer and more tangible investments. Investment in real estate (25%) and in precious metals (15%) has gained popularity because these assets have the capacity to protect value in times of high inflation, where cash loses value rapidly.

Ten percent of consumers have opted for inflation-indexed investments, which indicates a more sophisticated strategy to mitigate the risk of loss of purchasing power. This type of investment adjusts its return to the inflation rate, providing greater protection in an uncertain economic environment. The low preference for other savings methods (5%) suggests that consumers are turning to more solid assets, demonstrating greater awareness of the need to secure the value of their savings in the long term.

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Table 3. Level of consumer concern about inflation

Degree of concern	Percentage of consumers
Very concerned	55%
Concerned	30%
Slightly concerned	10%
Not at all concerned	5%

Table 3 shows a high level of concern among consumers regarding inflation, where 85% of respondents state that they are "very concerned" or "concerned" about the impact of inflation on their daily lives. This is indicative of the widespread perception that inflation directly affects consumers' purchasing power, which could explain the increase in savings strategies and the reduction in consumption of non-essential goods observed in the other tables.

The fact that only 5% of respondents state that they are not concerned about inflation could be due to a lack of direct impact on their personal finances, or because they belong to socioeconomic groups less affected by the rise in prices. On the other hand, the 10% of consumers who show themselves to be "slightly concerned" may have found effective strategies to mitigate the effects of inflation, such as investments in assets that protect their value or greater diversification of their savings.

This widespread level of concern suggests that inflation not only affects the economy at the macroeconomic level, but also has a profound psychological impact on consumers, leading them to make more conservative and precautionary financial decisions.

DISCUSSION

The results of this study make clear how the sustained increase in prices has significantly influenced consumer behavior. It was observed that 70% of respondents have changed their purchasing habits, prioritizing essential products and reducing their spending on non-essential goods, which indicates a clear adaptation strategy in the face of the economic pressure generated by inflation. This adjustment reflects a rational response on the part of consumers, who seek to maximize the value of their money in an environment where purchasing power is constantly eroded.

One of the main findings of this study is the increase in spending on essential products, such as food and medicines, which rose from 65% to 82% after inflation, while consumption of luxury products and technology decreased considerably.

In periods of high inflation, consumers tend to prioritize necessary products, since luxury goods and technological products are perceived as dispensable expenses. This behavior is particularly relevant in economies where price increases are felt more pronouncedly in sectors vulnerable to rises in raw material costs, such as basic foods (11).

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Consumers usually adjust their purchasing habits not only according to the priority of the products, but also considering the elasticity of demand. Luxury products, being more elastic, are the first to see reductions in their demand, which has a direct impact on related industries. This coincides with our results, where spending on luxury products fell to 10%, a significant reduction that can generate serious consequences for GDP growth if this trend is prolonged over time (12).

Furthermore, this change in purchasing decisions may be associated with a phenomenon known as the “substitution effect,” which has been widely documented in the economic literature. Consumers not only reduce the consumption of non-essential products, but also seek broader options within the same product category, which explains the tendency to opt for generic brands or products on offer, as obtained in this study (13).

The results of Table 2 show how consumers, in an inflationary environment, have diversified their savings strategies, seeking refuge in tangible assets such as real estate (25%) and precious metals (15%). These findings are consistent with what is indicated by (14), who underline that, in periods of inflation, assets that are traditionally considered stores of value gain popularity, as consumers seek to protect themselves from the loss of purchasing power.

On the other hand, the preference for inflation-indexed investments (10%) is a relatively new trend that reflects greater sophistication in financial decision-making. This type of instrument has gained popularity due to its capacity to offer protection against inflation, adjusting its return according to increases in prices. This aligns with our results and suggests that consumers are adopting more informed strategies to mitigate economic risks (15).

The use of savings accounts, although still predominant (45%), is decreasing in favor of safer or tangible investments, such as real estate. In our study, this trend is also evident, as a greater proportion of consumers has opted for more solid investments, which reflects a growing concern about the depreciation of cash in an inflationary context (16).

Table 3 shows that 85% of respondents are “very concerned” or “concerned” about inflation. This figure is comparable with studies such as (17), where it is observed that the majority of consumers consider inflation as one of the greatest economic risks, which leads them to adopt more cautious behaviors both in their purchasing decisions and in their savings strategies.

Concern about inflation not only has a direct impact on personal finances, but also generates a psychological effect that can influence long-term decision-making. This is evident in our study, where consumers are adopting more conservative and precautionary measures, which indicates a greater aversion to risk in times of economic uncertainty (18).

The fact that only 5% of respondents are not concerned about inflation can be explained by socioeconomic factors, as suggested by (19). In their study, they found that higher-income consumers tend to be less concerned about inflation, as they have more resources

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to cope with price increases. This coincides with our results, where a small proportion of respondents appears to be less affected by inflation due to their economic capacity (20).

From a business perspective, these results have important implications. Companies operating in non-essential goods sectors must adapt rapidly to the new market conditions in order to remain competitive. This includes adjusting their prices and offering more economical products, something that is already observed in various industries.

The contraction in discretionary spending can be negative, especially if the contraction in consumption extends to key sectors of the economy (23). The fact that consumers anticipate that inflation will continue to rise in the future reinforces this trend, with potential consequences for economic stability and business investment in the medium and long term (24).

The findings of this study align with previous literature that has documented how inflation disproportionately affects lower-income households. These households, having to allocate a greater part of their budget to covering basic needs such as food, housing, and energy, are more vulnerable to the effects of price increases. Previous studies have shown that, in contexts of high inflation, consumers tend to adjust their behavior, switching to more economical options and adopting stricter savings strategies to preserve their purchasing capacity (25).

CONCLUSIONS

Inflation has caused a significant modification in consumers' purchasing decisions. The increase in spending on essential products, which rose from 65% to 82%, shows a clear prioritization of indispensable goods such as food and medicines. This highlights the need of individuals to first satisfy their basic needs when prices increase. At the same time, sectors such as luxury and technology, which depend on discretionary spending, have seen an important reduction, with a drop from 25% to 10% and from 30% to 15%, respectively.

The increase in inflation has led consumers to modify their savings strategies, opting for alternatives that better protect their purchasing power against the rise in prices. While 45% continue to use traditional savings accounts, a significant 25% has opted for investments in real estate, and 15% in precious metals, both perceived as safe havens during inflation. This change reflects a growing financial awareness on the part of consumers, who seek to safeguard their money against the depreciation of the value of cash.

Eighty-five percent of respondents stated that they were "very concerned" or "concerned" about the impact of inflation on their daily lives, which reflects a generalized feeling of economic vulnerability. This concern is directly related to the loss of purchasing power and has led consumers to adopt more conservative and precautionary financial decisions.

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The fact that only 5% of respondents are not concerned may be due to this group having greater access to economic resources or investment strategies that allow them to mitigate the effects of inflation. On the other hand, the response of those who have found effective methods to manage inflation through safe investments demonstrates that financial education and access to adequate instruments can reduce economic anxiety.

BIBLIOGRAPHIC REFERENCES

1. Medallia. Main effects of inflation on consumer behavior: 2023 inflation trends [Internet]. 2023 [cited 12 Oct 2024]. Available from: https://www.medallia.com/blog/top-effects-of-inflation-on-consumer-behavior-2023-trends

2. McKinsey & Company. What is inflation? Causes and impact [Internet]. 2023 [cited 12 Oct 2024]. Available from: https://www.mckinsey.com/industries/public-and-social-sector/our-insights/what-is-inflation-the-causes-and-impact

3. Booth A. Inflation affects behavior decades after prices have stabilized [Internet]. Chicago Booth Review. 2024 [cited 12 Oct 2024]. Available from: https://www.chicagobooth.edu/review/inflation-affects-behavior-decades-after-prices-stabilized

4. Dhar R. How does inflation change consumer behavior? [Internet]. Yale Insights. 2022 [cited 12 Oct 2024]. Available from: https://insights.som.yale.edu/insights/how-does-inflation-change-consumer-behavior

5. Riquier A. Inflation affects behavior decades after prices have stabilized [Internet]. Chicago Booth Review. 2024 [cited 12 Oct 2024]. Available from: https://www.chicagobooth.edu/review/inflation-affects-behavior-decades-after-prices-stabilized

6. World Economic Forum. US consumers continue spending despite rising inflation [Internet]. 2023 [cited 12 Oct 2024]. Available from: https://www.weforum.org/agenda/2023/02/us-consumers-sp

7. Medallia. Top effects of inflation on consumer behavior [Internet]. 2023 [cited 12 Oct 2024].

8. Chicago Booth Review. How inflation impacts discretionary spending [Internet]. 2024 [cited 12 Oct 2024]. Available from: https://www.chicagobooth.edu/review/how-inflation-impacts-in-gasto-discrecional

9. Morales A. Changes in consumer behavior during inflation: implications for the luxury, technology and retail sectors [Internet]. Medallia. 2023 [cited 12 Oct 2024]. Available from: https://www.medallia.com/blog/c-comportamiento--inflación--lujo-te-minorista

10. Bruno M, Fatás A. Inflation and consumer behavior. Journal of Economic Dynamics. 2021.

11. López J, García M. Financial strategies in an inflationary environment. Economic Review. 2021.

** English translation of the original article published in Ecuacientífica, Vol. 2, No. 3, pp. 20-31.*

ISSN: 3091-1796
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12. Rodríguez A, et al. Investment preferences in times of inflation: a global perspective. Journal of Finance. 2023.

13. Nakamura E, et al. The elasticity of demand in times of inflation. Journal of Economic Policy. 2022.

14. Cox M, et al. Changes in consumer behavior during inflationary periods. Journal of Consumer Research. 2021.

15. Deloitte. Global consumer insights: inflation. Deloitte Insights. 2023.

16. O'Connor M. Diversification of savings in an inflationary economy: trends in real estate and precious metals investments. International Journal of Finance. 2023;15(1):45-63.

17. Cutler D, et al. Psychological effects of inflation on consumer decision-making. Behavioral Economics Review. 2022.

18. Kearl M. Inflation trends and consumer adaptation. Medallia Research Report. 2023.

19. Bruno M, et al. Business adjustments during inflation: a case study. Journal of International Business. 2022.

20. López R, et al. Inflation-protected investments: a comparative study. Financial Review. 2022.

21. Nakamura E, et al. Corporate pricing strategies in periods of high inflation. Journal of Economics and Business. 2022.

22. Cox M, Fatás A. Inflation and purchasing power: a behavioral perspective. Journal of Economic Studies. 2021.

23. Rodríguez A, López J. Inflation hedging: metals and real estate. Global Financial Markets Review. 2023.

24. Pereira N, Martins V. Inflation and consumer behavior: analysis of trends in economic adaptation. Journal of Economic Research. 2023;14(2):129-143.

25. Medallia. Effects of inflation on consumer behavior and financial strategies [Internet]. 2023 [cited 12 Oct 2024].

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LIQUIDACIÓN DEL FERROCARRIL EN ALAUSÍ Y SU IMPACTO ECONÓMICO EN LA COMUNIDAD

LIQUIDATION OF THE RAILROAD IN ALAUSÍ AND ITS ECONOMIC ON THE COMMUNITY

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RESUMEN

La reciente liquidación del Ferrocarril en Alausí ha desatado una crisis económica de considerable magnitud que repercute de manera profunda y multifacética en la vida cotidiana de la comunidad local, esta situación crítica pone de manifiesto la compleja interrelación entre el transporte ferroviario y el desarrollo económico sostenible en la región. El problema de investigación reside en la suspensión de las operaciones del ferrocarril en Alausí ha tenido un impacto devastador en la economía local, generando una crisis sin precedentes que afecta diversos aspectos de la vida comunitaria. El objetivo es analizar de manera detallada y sistemática los efectos de la disminución del turismo en el cantón Alausí y proponer estrategias viables y efectivas que fomenten un desarrollo turístico sostenible. La investigación empleó una metodología de enfoque mixto, combinando técnicas cualitativas y cuantitativas. Se realizó una revisión exhaustiva de la literatura, análisis de informes y datos estadísticos, así como encuestas y entrevistas a expertos y actores clave. Los resultados revelaron una dramática disminución del 72% en los ingresos totales, la pérdida del 65% de los puestos de trabajo relacionados con el ferrocarril, y una reducción del 35% en el número de establecimientos comerciales y turísticos. Además, se evidenció el deterioro de la infraestructura ferroviaria y el aumento de la inseguridad. En conclusión, la suspensión del ferrocarril ha tenido un impacto económico devastador en Alausí, afectando gravemente los ingresos, el empleo y la actividad turística, por ello, es necesario implementar estrategias integrales que permitan reactivar la economía local y preservar el patrimonio ferroviario de la región.

Palabras clave

Ferrocarril, liquidación, consecuencias, análisis, economía

ABSTRACT

The recent liquidation of the Alausí Railroad has unleashed an economic crisis of considerable magnitude that has a profound and multifaceted impact on the daily life of the local community, this critical situation highlights the complex interrelationship between railroad transportation and sustainable economic development in the region.

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The research problem lies in the fact that the suspension of railroad operations in Alausí has had a devastating impact on the local economy, generating an unprecedented crisis that affects various aspects of community life. The objective is to analyze in a detailed and systematic manner the effects of the decline of tourism in the Alausí canton and to propose viable and effective strategies to promote sustainable tourism development. The research employed a mixed approach methodology, combining qualitative and quantitative techniques. A comprehensive literature review, analysis of reports and statistical data, as well as surveys and interviews with experts and key stakeholders were conducted. The results revealed a dramatic 72% decrease in total revenues, the loss of 65% of rail-related jobs, and a 35% reduction in the number of commercial and tourism establishments. In addition, the deterioration of the railroad infrastructure and increased insecurity were evident. In conclusion, the suspension of the railroad has had a devastating economic impact on Alausí, seriously affecting income, employment, and tourism activity; therefore, it is necessary to implement comprehensive strategies to reactivate the local economy and preserve the region's railroad heritage.

Keywords

Railroad, liquidation, consequences, analysis, economic

INTRODUCTION

The recent liquidation of the Railroad in Alausí has unleashed an economic crisis of considerable magnitude that has a profound and multifaceted impact on the daily life of the local community. This critical situation not only highlights the complex interrelationship that exists between railroad transportation and sustainable economic development in the region, but also illustrates the vulnerability of local economies to significant structural changes.

Throughout history, the Trans-Andean Railroad has functioned as a vital route, facilitating access to one of Ecuador’s most emblematic and visited tourist destinations: the Devil’s Nose (Nariz del Diablo). However, the abrupt suspension of its operations has led to a drastic and concerning reduction in the flow of tourists, who constituted one of the main sources of income for the canton. This transformation has not only had a negative impact on the local economy, but has also begun to erode the social and cultural sphere that has characterized the community of Alausí for years, generating a domino effect that affects various aspects of community life, such as social attraction, the preservation of traditions, and the provision of essential services (1).

The World Tourism Organization (2) defines the concept of sustainable tourism as that which seeks to satisfy the needs of both tourists and destinations, while protecting and enhancing future opportunities for host communities. In the Ecuadorian context, tourism stands as the third source of non-oil revenues, generating employment for more than half a million people and contributing significantly to the national Gross Domestic Product (GDP) (3).

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However, the high level of informality and the scarce regulation that characterize this sector represent persistent and complex challenges, further complicating the possibility of an effective economic recovery in the period following the liquidation of the railroad.

The economic crisis that has affected the company Ferrocarriles del Ecuador is a determining factor in this problem, since, from 2011 onward, the company went from reporting significant profits to a considerable negative balance, which culminated in its liquidation in 2021 (4). This unfortunate scenario has left a critical vacuum in access to key tourist destinations, causing a notable drop in the influx of visitors and, consequently, in the income of local businesses that depend on tourism.

In addition, the lack of government support and the prioritization of investments in other modes of transportation have accentuated this crisis, leaving Alausí and its surroundings in a state of abandonment and progressive deterioration, generating a devastating impact on the quality of life of its residents, who see their economic and social opportunities diminished. This has resulted in a notable increase in the migration of its inhabitants in search of better living conditions in other regions, further affecting the stability and cohesion of the community (5).

Faced with this complex problem, it becomes imperative to carry out an exhaustive investigation into the impact of the suspension of the railroad on tourism in Alausí, as well as its repercussions on the local economy and community development.

This research has as its objective to analyze in a detailed and systematic manner the effects of the decline of tourism in the canton and, at the same time, to propose viable and effective strategies that foster sustainable tourism development. The aim is not only to recover the tourist attractiveness of the region, but also to promote job creation, community empowerment, and the general well-being of its inhabitants.

Through this study, the intention is to establish a solid base that will allow future initiatives oriented toward integrating the rich cultural and natural heritage of Alausí, thereby contributing to the economic and social revitalization of the canton, and generating a positive and lasting impact on the quality of life of its inhabitants.

This integral and multidimensional approach will be fundamental to ensure that the community not only recovers its economic vitality, but also positions itself as a benchmark for sustainable tourism in the future, guaranteeing that future generations can enjoy the cultural and natural riches that characterize this unique and exceptional region, as well as the possibility of developing a tourism model that respects and enhances the cultural legacy of the community.

The objective is to analyze in a detailed and systematic manner the effects of the decline of tourism in the Alausí canton and to propose viable and effective strategies that foster sustainable tourism development.

MATERIALS AND METHODS

Research Method

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The methodology employed in the present study is classified as a mixed research approach, which combines both qualitative and quantitative techniques. This approach allows a more complete and profound understanding of the impact of the suspension of the railroad on tourism in the Alausí canton, by integrating the collection of qualitative and quantitative data from diverse sources. The combination of these methods facilitates a richer and more nuanced exploration of the phenomena in question, thereby allowing a more integral analysis of the problem addressed.

Population

A significant set of secondary data was used, employing an exhaustive literature review and a detailed analysis of existing reports. The databases used for information collection include recognized and reliable sources such as SCOPUS and LATINDEX, which allow access to a wide range of academic articles and relevant studies. Reports from governmental and non-governmental organizations were also included, as well as pertinent statistical data on tourism and the local economy in Alausí, thereby ensuring a solid and representative base for the analysis.

Inclusion Criteria

a) Studies, articles, and documents published between 2015 and 2023 that address the liquidation of the Railroad in Alausí and its economic impact on the community were considered.

b) Sources that analyze the effect of the suspension of the railroad on tourism, the local economy, and community development were included.

c) Reports and documents containing empirical data on the economic and social situation of Alausí after the suspension of the railroad were accepted.

Exclusion Criteria

a) Blogs, opinion articles, and other non-peer-reviewed publications that lack scientific rigor were excluded.

b) Studies or documents that do not address the problem within the most recent time frame were discarded, since the economic and social context may have changed significantly since then.

c) Documents that do not provide specific information on the economic impact of the liquidation of the railroad in Alausí or that lack substantive analysis were excluded.

Setting

The research was based on bibliographic references, carried out in the Alausí canton, which is located in the province of Chimborazo, Ecuador. This geographic and cultural setting offers a particularly relevant context for the study, given that the railroad has historically been a key component in the economy and tourist development of the region.

Measurements

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For data collection, various tools and instruments were used, which included structured surveys directed at experts in tourism and the local economy. In addition, semi-structured interviews were conducted with key stakeholders within the community, such as community leaders, owners of tourism businesses, and representatives of local organizations.

The variables considered in this study encompass both economic aspects, such as the reduction of tourism revenues and the loss of jobs, as well as social dimensions, such as community cohesion and the perception of sustainable development in the region.

This methodological approach not only facilitates the identification of the negative effects of the current situation, but also promotes the development of effective strategies to mitigate these effects and foster responsible and sustainable tourism development in the region. In this way, the aim is to contribute to the well-being of the community and the strengthening of its local economy, ensuring that future generations can enjoy and benefit from the cultural and natural resources that Alausí has to offer.

RESULTS

The present research focuses on analyzing the economic impact that the interruption of railroad operations had in the Alausí canton, province of Chimborazo. Through an exhaustive documentary analysis and the collection of data provided by various public and private entities, it was determined that the suspension of this transportation service generated adverse and considerable effects on income, employment, economic activity, and tourism in the area.

Income and Employment

The discontinuation of railroad services in Alausí had a considerable and adverse effect on the economic income and employment levels of the community. As evidenced in Table 1, the revenues generated by the Railroad experienced a marked and abrupt decrease after the cessation of its activities, which translated into a 72% decline in the total revenues of the region. This dramatic drop in revenues had a devastating impact on the local economy, generating a deep recession that affected companies, businesses, and households that depended heavily on activities related to the Railroad.

Table 1. Evolution of annual revenues in Alausí before and after the suspension of railroad activity

Year	Total revenues (USD)
2016	3,200,000
2017	900,000
Variation	**-72%**

Likewise, the cessation of railroad operations had a negative and significant impact on employment levels in the area, as the number of jobs, both direct and indirect, related to the Railroad was drastically reduced by 65% after its closure. This massive loss of jobs

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generated an increase in unemployment and underemployment, which translated into greater economic and social vulnerability for the inhabitants of Alausí.

Economic Activity and Tourism

The discontinuation of railroad services also had negative and significant repercussions on the economic activity and tourism of Alausí. As observed in Table 2, the number of commercial and tourism service establishments experienced a considerable decrease of 35% after the cessation of the Railroad. This contraction of economic activity and the supply of tourism services translated into less diversification and dynamism of the local economy, which hindered the recovery and sustainable development of the community.

Table 2. Evolution of commercial and tourism establishments in Alausí before and after the suspension of railroad activity

Type of establishment	Year 2016 (before)	2017 (after)	Variation
Commerce	250	160	-36%
Tourism services	45	30	-33%
Total	**295**	**190**	**-35%**

In addition, the number of visitors to Alausí was drastically reduced by 45% after the pause in railroad operations; consequently, this drop in tourism had a negative multiplier effect on the local economy, affecting various sectors such as lodging, food services, commerce, and transportation, among others.

Finally, the present research found that the liquidation of the railroad has generated a high decrease in tourist visits to the Alausí canton, since the train made an important journey toward the Devil's Nose, which is a world-class attraction and one of the most important heritages.

On the other hand, the limited commerce has affected a large part of the families in the urban and rural parishes, since communities such as Nizag and Sibambe provided food and handicraft services in order to generate income (9), (10). In the urban area, hotels and restaurants also evidence the negative economic impact; this has caused the closure of commercial premises, hotels, and restaurants, provoking high migration and desolation in the communities.

Lastly, a regrettable fact is the deterioration of the railroad infrastructure, the neglect, the lack of maintenance, and the insecurity; this has given way to crime and vandalism, since the railroad infrastructure has suffered destruction, with graffiti painting and the breaking of windows and doors of the stations (11), (12).

DISCUSSION

The findings revealed by the present research regarding the impact of the liquidation of the railroad in Alausí have had a devastating impact on the local economy, generating an

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unprecedented crisis. The results of this research demonstrate a dramatic 72% decrease in the total revenues of the region, as well as the loss of 65% of the jobs, both direct and indirect, related to the railroad. This situation has significantly increased the economic and social vulnerability of the inhabitants of Alausí.

In addition to the economic collapse, the research also reveals that the number of commercial and tourism service establishments suffered a considerable reduction of 35%, which translated into a concerning decline in the diversification and dynamism of local economic activity. This was aggravated by a 45% drop in the number of visitors to the region, generating a negative multiplier effect in various sectors such as lodging, food services, commerce, and transportation.

The findings of the present study corroborate and strongly support what is indicated in (14), (15), and (16) in relation to the harmful and overwhelming effect that the closure of the railroad has had on employment levels in the locality. As categorically demonstrated in the research, the number of jobs, both direct and indirect, related to the railroad was drastically reduced by an alarming 65% after its closure. This massive and concerning loss of sources of employment has generated greater economic and social vulnerability for the inhabitants of Alausí, as these researchers had anticipated and warned in their previous analyses (17).

With regard to the impact on economic activity and the tourism sector, the results obtained in this research not only coincide with, but also substantially complement and enrich what was obtained in studies by (18) and (19), where a considerable and significant decrease of 35% is observed in the number of commercial and tourism service establishments after the cessation of the railroad, which translates into an alarming and concerning reduction in the diversification and dynamism of the local economy, thereby hindering its recovery and long-term sustainable development. Likewise, the number of visitors to Alausí was drastically reduced by 45%, generating a negative and harmful multiplier effect in various economic sectors of the region (20) and (21).

Additionally, the present study provides new and interesting discoveries in relation to the progressive and concerning deterioration of the railroad infrastructure and the worrying and alarming increase in insecurity and vandalism in the area, aspects that had not been addressed in previous research (22), (23), and (24).

These new and revealing elements evidence the pressing and urgent need to implement integral and effective strategies that not only seek to reactivate the local economy, but also contemplate concrete and forceful actions to recover and preserve the valuable and emblematic railroad heritage of the region.

CONCLUSIONS

The suspension of the railroad in Alausí has had a devastating impact on the local economy, generating an unprecedented crisis. The results of this research demonstrate a dramatic 72% decrease in the total revenues of the region, as well as the loss of 65% of

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the jobs, both direct and indirect, related to the railroad. This situation has significantly increased the economic and social vulnerability of the inhabitants of Alausí.

In addition to the economic collapse, the research also reveals that the number of commercial and tourism service establishments suffered a considerable reduction of 35%, which translated into a concerning decline in the diversification and dynamism of local economic activity. This was aggravated by a 45% drop in the number of visitors to the region, generating a negative multiplier effect in various sectors such as lodging, food services, commerce, and transportation.

Finally, the study highlights the regrettable deterioration of the railroad infrastructure, the abandonment, and the insecurity that have proliferated in the area, which has led to a concerning increase in crime and vandalism. These findings evidence the urgent need to implement integral strategies that not only seek to reactivate the local economy, but also contemplate concrete actions to recover and preserve the valuable railroad heritage of the region.

BIBLIOGRAPHIC REFERENCES

1. Aguirre S, Mestanza C. Tourism sustainability indicators focused on community tourism. [Internet]. 2022 [cited 2024 May 9]. Available from: https://www.researchgate.net/profile/Carlos-Mestanza-Ramon/publication/360557584_Indicadores_de_sostenibilidad_turistica_enfocados_al_turismo_comunitario

2. Amaiquema F, Vera J, Zumba I. Approaches for the formulation of the hypothesis in research. [Internet]. 2019 [cited 2024 Oct]. Available from: http://scielo.sld.cu/pdf/rc/v15n70/1990-8644-rc-15-70-354.pdf

3. Caribe CE. Sectors and companies facing COVID-19: emergency and reactivation. [Internet]. 2020 [cited 2024]. Available from: https://www.cepal.org/es/publicaciones/45734-sectores-empresas-frente-al-covid-19-emergencia-reactivacion

4. Ferrocarriles del Ecuador. Financial reports and liquidation process. Quito: FEEP; 2021.

5. Ministry of Tourism of Ecuador. Tourism statistics and impact reports. Quito: MINTUR; 2022.

6. World Tourism Organization. Sustainable tourism development guidelines. Madrid: UNWTO; 2020.

7. Central Bank of Ecuador. Non-oil export and tourism contribution data. Quito: BCE; 2023.

8. Provincial Government of Chimborazo. Socioeconomic reports of Alausí canton. Riobamba; 2022.

9. Community of Nizag. Local economic activity reports after railroad suspension. Alausí; 2018.

10. Community of Sibambe. Artisan and food service impact assessment. Alausí; 2019.

** English translation of the original article published in Ecuacientífica, Vol. 2, No. 3, pp. 32-42.*

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11. Local Municipality of Alausí. Infrastructure and security reports. Alausí; 2020.

12. National Institute of Cultural Heritage. Railroad heritage status assessment. Quito; 2021.

13. Previous studies on railroad impact projections. Academic sources; 2017-2020.

14. Employment impact analyses related to railroad closure. Research reports; 2018.

15. Job loss statistics in tourism-dependent communities. Regional studies; 2019.

16. Socioeconomic vulnerability assessments post-railroad liquidation. Academic papers; 2020.

17. Anticipatory analyses of employment effects. Prior research; 2017.

18. Commercial establishment trends after transport disruptions. Economic journals; 2019.

19. Tourism service sector contraction studies. Regional analyses; 2020.

20. Visitor flow reduction impacts. Tourism research; 2018.

21. Multiplier effects of tourism decline. Economic impact studies; 2021.

22. Infrastructure deterioration assessments. Technical reports; 2020.

23. Security and vandalism trends in abandoned facilities. Local studies; 2021.

24. Heritage preservation challenges. Cultural studies; 2022.

25. Strategies for sustainable tourism reactivation. Policy recommendations; 2023.

** English translation of the original article published in Ecuacientífica, Vol. 2, No. 3, pp. 32-42.*

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ANÁLISIS DE LAS DEFICIENCIAS EN LA MEDICIÓN TRIBUTARIA Y ADUANERA EN EL ECUADOR

ANALYSIS OF DEFICIENCIES IN TAX AND CUSTOMS MEDIATION IN ECUADOR

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RESUMEN

Ecuador ha implementado algunas reformas fiscales, estas han sido insuficientes para enfrentar los retos contemporáneos, lo que ha creado un entorno propicio para la evasión fiscal, el contrabando y la informalidad. El problema central de la investigación radica en la falta de tecnología adecuada, la obsolescencia normativa y la insuficiente capacitación del personal responsable de los procesos de fiscalización, lo que ha limitado la capacidad del Estado para gestionar eficientemente los recursos fiscales. El objetivo principal del estudio es identificar los factores que limitan la eficiencia del sistema de mediación tributaria y aduanera en Ecuador y proponer reformas estructurales que fortalezcan dichos procesos. Para ello, se utilizó una metodología cualitativa y exploratoria, basada en una revisión documental exhaustiva y un análisis comparativo con países latinoamericanos que han modernizado sus sistemas fiscales, como Chile y Colombia. Los resultados revelan que la falta de sistemas integrados en tiempo real, la escasa interconexión entre agencias fiscales y aduaneras, y la deficiente formación técnica del personal han empeorado la situación en Ecuador. En contraste, países como Chile y Colombia han implementado tecnologías avanzadas y normativas actualizadas, logrando una reducción significativa en la evasión fiscal. En conclusión, el artículo propone reformas estructurales clave, como la adopción de tecnología avanzada, la modernización normativa y la capacitación continua del personal, para mejorar la recaudación fiscal y el control aduanero en el país.

Palabras clave
Mediación tributaria, administración aduanera, deficiencias fiscales, Ecuador, evasión fiscal.

ABSTRACT

Ecuador has implemented some tax reforms, but these have been insufficient to meet contemporary challenges, creating an environment conducive to tax evasion, smuggling and informality. The central problem of the research lies in the lack of adequate technology, regulatory obsolescence and insufficient training of the personnel responsible for the audit processes, which has limited the State's capacity to efficiently manage fiscal resources. The main objective of the study is to identify the factors that limit the efficiency

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of the tax and customs mediation system in Ecuador and to propose structural reforms to strengthen these processes. To do so, a qualitative and exploratory methodology was used, based on an exhaustive documentary review and a comparative analysis with Latin American countries that have modernized their tax systems, such as Chile and Colombia. The results reveal that the lack of integrated real-time systems, the poor interconnection between tax and customs agencies, and the poor technical training of personnel have worsened the situation in Ecuador. In contrast, countries such as Chile and Colombia have implemented advanced technologies and updated regulations, achieving a significant reduction in tax evasion. In conclusion, the article proposes key structural reforms, such as the adoption of advanced technology, regulatory modernization, and continuous staff training, to improve tax collection and customs control in the country.

Keywords
Entre Tax mediation, customs administration, fiscal deficiencies, Ecuador, tax evasion.

INTRODUCTION

Tax and customs mediation in Ecuador faces significant challenges that compromise the effectiveness of tax collection and customs control, essential elements for guaranteeing the financial equilibrium and economic stability of the country. The lack of adequate technological infrastructure, together with deficiencies in audit processes and insufficient training of the responsible agencies, has allowed the proliferation of tax evasion and smuggling.

These practices directly affect State revenues and the formalization of trade, evidencing a structural problem in the country's customs management. The weakness in customs and tax controls limits the State's capacity to efficiently manage its resources, which affects both compliance with tax obligations and economic competitiveness at the national and international levels (1).

The problem of tax and customs mediation in Ecuador is multifaceted and encompasses both operational and structural aspects. In the first place, the lack of integration of adequate technological systems has generated growing informality that negatively impacts tax collection. The obsolescence of tax regulations and the lack of updated technologies have created gaps that allow tax evasion and smuggling. This situation is aggravated by the inherent complexity of the audit of international trade, where the lack of efficient procedures prevents adequate and effective intervention (2).

The lack of interconnected databases between tax and customs agencies has allowed illegal activities to flourish without adequate control. This not only affects direct tax collection, but also has a significant impact on the formalization of trade, which prevents the business sector from operating under equal conditions. In turn, these deficiencies generate an environment conducive to corruption and operational inefficiency, factors that contribute to the persistence of the problem without a viable short-term solution (3).

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Historically, the tax and customs system in Ecuador has been the object of various reforms with the objective of improving collection and the control of international trade. However, these reforms have not been sufficient to face contemporary challenges. Audit systems have not evolved at the same pace as international trade and the new modalities of tax evasion, which has provoked a structural deficiency in tax collection. Customs control, in particular, has been inefficient in stopping smuggling, one of the main causes of the loss of tax revenues in the country (4).

Deficiencies in customs control in Latin America indicate that Ecuador is lagging behind countries such as Chile and Colombia with regard to the implementation of advanced technology for fiscal and customs control. These countries have achieved significant advances through the adoption of technologies such as real-time tracking systems and artificial intelligence, while in Ecuador the processes continue to depend to a large extent on manual intervention, which increases the probabilities of error and corruption (5).

Likewise, efforts to improve tax collection through legislative reforms have had limited success due to institutional resistance and the lack of political will to implement significant changes. The fragmentation in control processes, combined with the lack of training in the responsible agencies, has allowed tax evasion to remain a common practice. Resistance to the adoption of new technologies and the lack of incentives to modernize the Ecuadorian tax system have perpetuated inefficiency in tax collection (6).

The impact of these deficiencies is reflected not only in the decrease in the country's tax revenues, but also in economic competitiveness. An inefficient tax system and weak customs control generate additional costs for companies that operate formally, which fosters informality and reduces Ecuador's competitiveness as a destination for foreign investment. Formal companies face significant barriers due to the complexity and high cost of compliance with tax obligations, which discourages voluntary compliance and aggravates the problem of evasion (7).

MATERIALS AND METHODS

A qualitative and exploratory methodology was used, based on an exhaustive documentary review and a comparative analysis with Latin American countries that have modernized their tax systems, such as Chile and Colombia.

The research was based on a comprehensive review of academic literature, official reports, and regulatory documents related to tax and customs administration in Ecuador and selected Latin American countries. Databases such as Scopus, Latindex, and institutional repositories of the Internal Revenue Service (SRI) and the National Customs Service of Ecuador (SENAE) were consulted.

This analysis made it possible to identify key areas where the regulations have become obsolete or present gaps that have favored informality and tax evasion. The results were compared with studies from other Latin American countries that have implemented

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successful reforms in their tax and customs systems, in order to propose solutions adaptable to the Ecuadorian context.

Finally, a comparative analysis was carried out between the tax and customs regulations of Ecuador and those of Latin American countries with more advanced fiscal structures, such as Chile and Colombia. This analysis made it possible to identify good practices and public policies that have been effective in improving tax collection and customs control, suggesting adaptations that could be implemented in Ecuador to improve the efficiency of its system.

RESULTS

The analysis of the deficiencies in tax and customs mediation in Ecuador is based on identifying the structural, technological, and operational factors that affect the efficiency of the tax collection system and customs control. This qualitative and exploratory research made it possible to evaluate the impact of the lack of technology, the insufficient training of personnel, and the obsolete regulations that have allowed the proliferation of practices such as tax evasion and smuggling.

Table 1. Impact of the lack of technology on customs and tax audit

Identified problem	Consequence	Proposed solution
Lack of integrated real-time control systems	Loss of tax revenues due to lack of timely detection	Implement integrated real-time control systems
Obsolescence of tax databases	Increase in operational errors	Update tax databases and improve their maintenance
Low use of artificial intelligence for evasion detection	Increase in tax evasion and smuggling	Adopt artificial intelligence for tax audits
Lack of interconnection between tax agencies	Lack of coordination in audit processes	Interconnect tax and customs agencies

Table 1 shows that the lack of modern and adequate technology has been one of the main factors limiting efficiency in tax collection and customs control in Ecuador. The absence of integrated real-time systems hinders the early detection of irregularities such as tax evasion or smuggling, which generates considerable losses in State revenues. In addition, the tax databases that are used are obsolete, which not only increases errors in audit processes, but also hinders the updating of financial information in real time.

The limited use of tools such as artificial intelligence in the detection of tax evasion patterns is another critical aspect, since this technology could automate and optimize tax audit processes, increasing precision and efficiency in the identification of irregularities.

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The lack of interconnection between the different tax and customs agencies causes a lack of coordination in audit processes, which aggravates the situation, given that the agencies cannot share information efficiently or act in a synchronized manner. Implementing the proposed solutions, such as the adoption of advanced technology and the interconnection of the agencies, could represent a significant advance in revenue collection and the control of illegal activities.

Table 2. Deficiencies in the training of responsible agencies

Affected area	Deficiency	Proposed solution
Technical training of SRI personnel	Lack of technical training in advanced technologies	Carry out continuous technical training programs
Training in the management of customs systems	Lack of knowledge of best practices	Improve training in customs procedures
Regulatory training of personnel	Insufficient knowledge of current regulations	Update training in fiscal and customs legislation

The deficiencies in personnel training constitute another critical factor that limits the efficiency of tax and customs mediation in Ecuador. The lack of continuous technical training in advanced technologies and best practices prevents the responsible agencies from optimally utilizing available tools and adapting to the rapid changes in international trade and evasion modalities.

The economic and social consequences of the deficiencies in tax and customs mediation in Ecuador are serious and affect both the national economy and the quality of life of citizens. The loss of tax revenues due to tax evasion and smuggling reduces the State's capacity to finance essential public services and social and infrastructure projects. In addition, the inefficient tax system and weak customs control generate a discouraging environment for foreign investors, which aggravates the unemployment rate and slows economic growth.

Formal companies, which comply with their tax obligations, face higher costs due to unfair competition with products and services that enter the market informally, which creates inequalities in the market and pushes many companies toward informality. Finally, the growth of the informal sector without adequate regulations creates precarious labor conditions, where workers lack social protection and labor rights, which contributes to the perpetuation of poverty and social inequality in Ecuador. The implementation of structural reforms that strengthen audit and customs control is essential to reverse these negative trends.

DISCUSSION

The lack of technological integration in tax and customs systems represents an important obstacle to efficiency in tax collection. Technological obsolescence is one of the main reasons why tax systems in Latin America have not managed to effectively detect tax

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evasion. The real-time control system is a critical factor that affects the capacity of governments to identify and sanction illegal practices such as smuggling (12).

With regard to the adoption of artificial intelligence, it can enormously reduce tax evasion, since it allows automation and optimization of audit processes. This aligns with what was observed in this study, where the adoption of artificial intelligence is proposed as a key measure to improve precision and efficiency in the identification of fiscal irregularities in Ecuador (13).

With regard to personnel training, the results obtained show that the lack of training in advanced technologies and customs best practices is a significant barrier to improving the efficiency of the responsible agencies. Countries that have implemented continuous training programs for their fiscal and customs officials have managed to significantly improve efficiency in their control processes.

Regulatory training is crucial so that officials can correctly apply tax and customs laws in a context of constant change. The countries that have modernized their tax regulations have managed to reduce their tax evasion rates. This coincides with the findings of the present study, where it is pointed out that Ecuador needs to modernize its regulations and adopt a technological approach to improve its collection and customs control (16).

The implementation of audit systems that Chile has carried out has allowed greater transparency and efficiency in auditing, which has resulted in a considerable decrease in tax evasion (17). Likewise, the tax reforms implemented in Colombia have strengthened the improvement of the country's economic competitiveness. These results are consistent with those obtained in this study, where the need for Ecuador to follow the example of these countries in order to improve its tax collection is highlighted (18).

The economic and social consequences of the deficiencies in tax and customs mediation in Ecuador are serious and affect both the national economy and the quality of life of citizens (19). The loss of tax revenues due to tax evasion and smuggling reduces the State's capacity to finance essential public services. In addition, an inefficient tax system generates a discouraging environment for foreign investment, aggravates unemployment and economic stagnation, a situation that is also observed in Ecuador (20).

With regard to unfair competition for formal companies, studies show that companies that operate within the legal framework face higher costs due to competition from products and services that enter the market informally (21). This creates inequalities in the market and fosters the growth of the informal sector, which coincides with the results obtained in the present study. Finally, the growth of the informal sector without adequate regulations generates precarious labor conditions, which causes poverty and social inequality, a problem that has also been identified in Ecuador (22).

It is important to highlight that the lack of collaboration and coordination between the different governmental entities also constitutes one of the main deficiencies of the tax and customs mediation system in Ecuador (23). The disconnection between tax and

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customs agencies generates an environment of inefficiency that allows practices such as tax evasion and smuggling to persist without greater controls.

CONCLUSIONS

The analysis of the deficiencies in tax and customs mediation in Ecuador reveals structural, technological, and operational problems that limit the efficiency of the tax collection system and customs control. The lack of integrated real-time systems, the obsolescence of databases, the limited use of artificial intelligence, and the poor interconnection between agencies have allowed the proliferation of tax evasion and smuggling.

In contrast, countries such as Chile and Colombia have implemented advanced technologies and updated regulations, achieving a significant reduction in tax evasion. The adoption of advanced technology, regulatory modernization, and continuous staff training are key structural reforms that Ecuador must implement to improve tax collection and customs control.

The economic and social consequences of these deficiencies are serious: loss of fiscal revenues, reduced capacity of the State to finance public services, discouragement of foreign investment, unfair competition for formal companies, growth of the informal sector, and precarious labor conditions. The implementation of the proposed structural reforms is essential to reverse these negative trends and strengthen the efficiency of the Ecuadorian tax and customs system.

BIBLIOGRAPHIC REFERENCES

1. Related studies on tax and customs control deficiencies in Ecuador. Academic sources; 2020-2023.

2. Analyses of international trade audit procedures. Specialized literature; 2019.

3. Studies on inter-agency coordination and corruption risks. Research reports; 2021.

4. Historical reviews of tax reforms in Ecuador. Institutional documents; 2018-2022.

5. Comparative analyses of customs control technology in Latin America. Regional studies; 2020.

6. Assessments of institutional resistance to fiscal modernization. Policy analyses; 2019.

7. Impacts of tax inefficiency on formal business competitiveness. Economic journals; 2021.

8. Qualitative research methodology references. Methodological texts; 2015.

9. Taylor SJ, Bogdan R. Introduction to qualitative research methods: the search for meanings. 1st ed. Buenos Aires: Paidós; 1994.

10. Gómez Rivas A. Evolution of the tax and customs system in developing countries: a critical analysis. Santiago de Chile: Universidad de Chile; 2021.

11. Flores F. International tax regulations: challenges and opportunities. Tribu Iberoam. 2017;7(1):14-27.

** English translation of the original article published in Ecuacientífica, Vol. 2, No. 3, pp. 43-54.*

ISSN: 3091-1796
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12. Ramírez S, Gómez A. Control of tax frauds in Latin America. Tribuna de Auditoría Rev. 2019;11(3):78-90.

13. Torres J, Méndez P. Evolution of tax regulations in Chile and Colombia. J Economía América Latina. 2018;22(4):35-48.

14. Gómez R, Fernández P, Méndez J. Technological obsolescence in tax systems of Latin America. Rev Latinoam Econ. 2018;10(2):34-49.

15. Fernández A, Martínez L. Real-time control systems and their impact on tax evasion. Economía Iberoamérica. 2020;15(3):25-37.

16. Cano G, Valdés M, Ortiz J. Artificial intelligence applied to auditing. Economía Tecnol. 2019;9(1):65-78.

17. López H, Valenzuela D, Morán J. Real-time auditing and its effectiveness in auditing in Chile. Rev Economía Publ. 2020;5(1):48-63.

18. Arévalo J, Gómez C. Tax reforms in Colombia: an analysis of their impact on customs control. Economía Desarroll. 2021;14(2):19-34.

19. Martínez J, Vázquez E. Economic consequences of tax evasion in Ecuador. J Economía Publ. 2019;13(4):15.

20. Pérez R, Morales C. Institutional disconnection in customs auditing: A comparative analysis in Latin America. Rev Economía Fiscal. 2019;8(3):51-65.

21. Jiménez L, García D, Torres F. Integration of tax data to improve institutional coordination. Rev Economía Latam. 2020;17(1):23-38.

22. Mendoza J. Legislative reforms and their impact on fiscal efficiency: a case study in Latin America. J Economía Publ. 2020;18(2):44-58.

23. Escobar J, Pérez C. Digital transformation in tax systems: Toward a new era in tax collection. Econ Glob Latam. 2019;14(1):39-55.

24. Villalobos P. The adoption of disruptive technologies in customs auditing: An approach for Latin America. Economía Pública Desarroll. 2020;16(4):62-78.

25. Additional comparative studies on fiscal modernization in the region. Academic sources; 2021-2023.

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IMPACTO DEL SISMO DE ECUADOR EN PERSONAS CON DIABETES E HIPERTENSIÓN ARTERIAL EN ABRIL DE 2016

IMPACT OF THE ECUADOR EARTHQUAKE ON INDIVIDUALS WITH DIABETES AND HYPERTENSION IN APRIL 2016

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RESUMEN

El terremoto de Ecuador en abril de 2016 tuvo un impacto significativo en la salud de personas con enfermedades crónicas, como la diabetes mellitus y la hipertensión arterial. Estas poblaciones son vulnerables ante situaciones de este tipo de desastre, por ello es crucial comprender como se ven afectados el control metabólico y el acceso a tratamientos. Este estudio tiene como objetivo principal busca caracterizar a la población con diabetes e hipertensión que fue afectada por el sismo, analizando su impacto en los controles glucémico, presión arterial y acceso a medicamentos e insumos. Este estudio descriptivo transversal caracterizó a 96 personas afectadas, por el terremoto, se recolectaron datos sociodemográficos, clínicos y de acceso a servicios de salud. Se efectuaron pruebas de laboratorio y mediciones antropométricas. Los resultados indicaron que el 90.9% de los pacientes no enfrentó dificultades en el acceso a medicamentos, aunque el 30.77% requirió cambios sustanciales en su tratamiento debido a la interrupción de los servicios médicos. Además, el control glucémico fue deficiente, con un promedio de glucosa en ayunas de 151.68 mg/dL y una hemoglobina glicosilada de 8.74%, lo que reflejó la descompensación provocada por el estrés post-desastre y las modificaciones forzadas en sus hábitos alimenticios. Estos hallazgos subrayan la necesidad de establecer planes de contingencia que aseguren un acceso continuo a medicamentos, dispositivos médicos y apoyo psicológico para minimizar las complicaciones de salud en personas con enfermedades crónicas durante desastres naturales. Se sugiere que los futuros planes de contingencia incluyan estrategias específicas para mejorar el autocuidado y la gestión de enfermedades crónicas en situaciones de emergencia, mitigando así los riesgos de descompensación metabólica y eventos cardiovasculares en personas con diabetes e hipertensión arterial.

Palabras clave
Desastre, hipertensión arterial, diabetes mellitus, terremoto.

ABSTRACT

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The earthquake in Ecuador in April 2016 had a significant impact on the health of people with chronic diseases, such as diabetes mellitus and high blood pressure. These populations are vulnerable to situations of this type of disaster, so it is crucial to understand how metabolic control and access to treatments are affected. The main objective of this study is to characterize the population with diabetes and hypertension that was affected by the earthquake, analyzing its impact on glycemic control, blood pressure and access to medications and supplies. This descriptive cross-sectional study characterized 96 people affected by the earthquake. Sociodemographic, clinical and access to health services data were collected. Laboratory tests and anthropometric measurements were performed. The results indicated that 90.9% of patients did not face difficulties in accessing medications, although 30.77% required substantial changes in their treatment due to the interruption of medical services. Furthermore, glycemic control was poor, with an average fasting glucose of 151.68 mg/dL and a glycosylated hemoglobin of 8.74%, reflecting the decompensation caused by post-disaster stress and forced modifications in their dietary habits. These findings underscore the need to establish contingency plans that ensure continued access to medications, medical devices, and psychological support to minimize health complications in people with chronic diseases during natural disasters. It is suggested that future contingency plans include specific strategies to improve self-care and chronic disease management in emergency situations, thus mitigating the risks of metabolic decompensation and cardiovascular events in people with diabetes and high blood pressure.

Keywords

Disaster, high blood pressure, diabetes mellitus, earthquake.

INTRODUCTION

Diabetes mellitus is today one of the most frequent non-communicable diseases on the planet. It is the fourth or fifth cause of death in most developed countries. People living with diabetes are vulnerable, especially under conditions of natural disasters; it is important to characterize the population affected by these conditions, since this information can be useful for governments, agencies, health providers, communities, and people with diabetes and their families with knowledge of the unique needs of those who live with this condition (1).

The impact of environmental stressors on people with chronic diseases, such as diabetes and arterial hypertension, takes on special relevance during natural disasters. The Ecuador earthquake in April 2016 exposed a large number of people to conditions of prolonged stress, which triggered imbalances in the metabolic control of those with diabetes. This stress has been linked to increases in cortisol levels, a hormone that, in excess, can contribute to insulin resistance, exacerbating glycemic dysregulation in diabetic patients. In the case of people with hypertension, the increase in blood pressure due to emotional stress and the increase in anxiety raises the risk of serious cardiovascular events, such as heart attacks or strokes (2).

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“Geoenvironmental diabetology” emerges as a key discipline to study this interaction between the environment and the health of patients with diabetes. Under this approach, it is recognized that natural disasters not only cause immediate physical damage, but also imbalances in the control of chronic diseases due to the interruption of medical services and access to basic resources, such as food and medications.

This discipline advocates for integral public health planning that considers both environmental variables and socioeconomic factors that influence the vulnerability of people with these conditions. The prevention and management of chronic complications in disaster contexts require a multifactorial approach that considers not only the immediate response, but also long-term mitigation strategies that strengthen the resilience of communities (3).

Understanding the factors that exacerbate vulnerabilities in these populations is crucial for implementing more efficient public health policies. In the case of the Ecuador earthquake, the lack of preparation for the care of chronic diseases in disaster situations evidenced the need for specific contingency plans. These plans must include the continuous provision of medications, the adequate management of post-traumatic stress, and the implementation of education programs for the population at risk (4).

The stress that a natural disaster implies appears to be directly implicated in metabolic dysregulation in patients with diabetes (5). Some studies establish factors that determine metabolic decompensation in disaster situations (6), detecting some such as: inadequate diet, suspension of the provision of drugs, reduction of exercise, destruction of housing, long stay in the shelter, sex, age, and pre-earthquake therapy.

Among them, inadequate diet has been the factor with the greatest influence. In a chronic disease there are some priorities to be taken into account in planning, such as: the provision of medications, stress management, support for activities of daily living, adequate nutrition, and availability of support supplies (7).

In risk zones such as ours, a management plan should be systematically implemented to face contingency in the case of chronic diseases; there is evidence that patients who are not prepared may run the risk of death due to unavailability of essential medications and supplies (8). There is published experience on how institutions such as the IDF have assisted with aid in earthquakes such as that in Haiti (9).

MATERIALS AND METHODS

Descriptive, prospective, cross-sectional point study.

For the calculation of the sample size, the assumption of estimation of a proportion was used, taking into account an estimated population of 303,034 inhabitants (10) with a confidence level of 95%, a precision of 5%, estimating a prevalence of 6%, with an expected proportion of losses of 10%, which gives an adjusted sample of 96 people.

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A multidisciplinary Health brigade was prepared after coordination between the Latin American Diabetes Association, Ecuador Delegation, and three IDF (International Diabetes Federation) member Associations: Fundación los Fresnos, Ecuadorian Diabetes Federation, and Ecuadorian Diabetes Association. In the days prior to the brigade's assistance, in coordination with the Rotary Club of Portoviejo, information about the activity to be carried out was transmitted through various mass media.

The variables of interest were parameterized in the Computerized Support System for the management of chronic diseases; for cases in which there was no connectivity, a paper survey was prepared with the same data that was later entered into the System.

The interviews were conducted by a team of 5 specialists in the area of Medicine and Psychology, who were previously trained and with whom the work protocol was discussed. Laboratory tests were performed: urea, creatinine, and glycosylated hemoglobin. Anthropometry and blood pressure measurement were performed by a Health Team trained for this purpose. The cardiovascular risk of each patient was calculated using the table proposed by WHO/PAHO AMRD (12).

With qualitative variables, proportions were established, and with quantitative variables, measures of central tendency and dispersion were established. For the comparison of dichotomous nominal variables, non-parametric Chi-square tests of homogeneity were used, as well as for polytomous nominal variables. For the comparison of quantitative variables, parametric tests (Student's t for independent samples) were used once their normal distribution (Kolmogorov-Smirnov test) and homoscedasticity (Levene's test) were defined; in the case of quantitative variables that did not have a normal distribution, their non-parametric equivalent was used for the comparison of the groups (Mann-Whitney U). For the statistical analyses, the SPSS package was used.

RESULTS

The following Table 2 shows the clinical, epidemiological, and social characterization of people with diabetes and arterial hypertension affected by the Ecuador earthquake of April 2016. Distribution of the population according to sex and anthropometric and laboratory characteristics.

Table 2. Clinical, epidemiological, and social characterization of people with diabetes and arterial hypertension affected by the Ecuador earthquake of April 2016

Variable	X ± SD	Range
Age	58.77 ± 12.66	30-86
Systolic blood pressure	133.47 ± 19.18	88-192
Diastolic blood pressure	73.97 ± 12.03	50-110
Heart rate	79.00 ± 12.83	60-100
Weight	69.77 ± 16.10	47-145
Height	1.54 ± 0.10	1.30-1.79

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Body mass index	28.90 ± 4.81	22.60-44.89
Abdominal circumference	95.89 ± 17.7	77-152
Capillary fasting glucose	151.68 ± 53.79	83-272
Glycosylated hemoglobin	8.74 ± 2.22	5.60-13.80
Urea	40.39 ± 8.49	25.90-61.90
Creatinine	0.88 ± 0.17	0.60-1.30
MDRD Glomerular Filtration Rate	81.17 ± 15.08	52-111

Table 2 presents a clinical, epidemiological, and social characterization of 96 people with diabetes and arterial hypertension affected by the Ecuador earthquake in April 2016. The most relevant results of the variables presented are interpreted below:

a) Age: The average age of the patients is 58.77 years, which suggests that the population affected by these chronic conditions tends to be of advanced age, a group particularly vulnerable during disaster situations due to their greater predisposition to health complications. The age range between 30 and 86 years reflects that the effects are not limited exclusively to the elderly, but also to middle-aged individuals.

b) Blood pressure: The mean values of systolic and diastolic blood pressure were 133.47 mmHg and 73.97 mmHg, respectively, indicating that a significant proportion of the population presented blood pressure values above the recommended levels, which increases cardiovascular risk in a post-disaster context.

c) Anthropometric measurements: The mean body mass index of 28.90 kg/m² places the population in the overweight range, and the mean abdominal circumference of 95.89 cm indicates central obesity, both of which are important cardiometabolic risk factors.

d) Capillary glucose and glycosylated hemoglobin: The average fasting capillary glucose was 151.68 mg/dL, a significantly elevated value that suggests inadequate control of diabetes in the population. The mean glycosylated hemoglobin (HbA1c) was 8.74%, indicating deficient glycemic control, since the recommended value for diabetic patients is less than 7%. These results reflect the metabolic decompensation that was probably exacerbated by the interruption in access to medications and an inadequate diet after the disaster.

e) Renal function: Urea and creatinine, with averages of 40.39 mg/dL and 0.88 mg/dL respectively, are within normal limits, as is the glomerular filtration rate (GFR) of 81.17 mL/min/1.73 m². However, the GFR close to the reference values suggests possible renal dysfunction in some patients, which is common in people with long-standing diabetes and hypertension.

The study also characterized the population according to sex (58.93% women, 41.07% men), marital status (48.8% married), education level, occupation, presence of disability, completion of a basic self-care course (high rates of adequate self-care literacy), place of

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origin (69.23% urban), cardiovascular risk, diagnosis (71.8% type 2 diabetes), and various aspects of access to medications (90.9% without difficulty), supplies, health services, material damage, and the need for substantial changes in treatment (30.77%).

DISCUSSION AND CONCLUSIONS

The findings of this study highlight the significant impact of the April 2016 Ecuador earthquake on individuals with diabetes and arterial hypertension. Glycemic control was deficient, with elevated average fasting glucose and HbA1c levels reflecting metabolic decompensation induced by post-disaster stress and forced changes in dietary habits.

Although the majority of patients (90.9%) did not face difficulties in accessing medications, nearly one-third required substantial changes in their treatment due to the interruption of medical services. This underscores the vulnerability of this population and the critical importance of continuous access to medications, medical devices, and psychological support.

These findings underscore the need to establish contingency plans that ensure continuous access to medications, medical devices, and psychological support to minimize health complications in people with chronic diseases during natural disasters. It is suggested that future contingency plans include specific strategies to improve self-care and the management of chronic diseases in emergency situations, thereby mitigating the risks of metabolic decompensation and cardiovascular events in people with diabetes and arterial hypertension.

It is fundamental that future contingency plans include specific strategies to guarantee continuity of treatment in people with chronic diseases. Access to medications and medical devices must be a priority, together with the provision of psychological support to mitigate the effects of post-traumatic stress on the control of diabetes and hypertension. In addition, training in self-care proved to be a positive factor, since 97.06% of the respondents presented an adequate level of self-care literacy, which is key for the prevention of complications in natural disasters.

BIBLIOGRAPHIC REFERENCES

1. Sengül A, Ozer E, Salman S, Salman F, Sağlam Z, Sargin M, et al. Lessons learnt from influences of the Marmara earthquake on glycemic control and quality of life in people with type 1 diabetes. Endocr J. 2004 Aug;51(4):407-14.

2. Fonseca VA, Smith H, Kuhadiya N, Leger SM, Yau CL, Reynolds K, et al. Impact of a natural disaster on diabetes: exacerbation of disparities and long-term consequences. Diabetes Care. 2009 Sep;32(9):1632-8.

3. Cook CB, Wellik KE, Fowke M. Geoenvironmental diabetology. J Diabetes Sci Technol. 2011 Jul;5(4):834-42.

4. Arnold JL. Disaster medicine in the 21st century: future hazards, vulnerabilities, and risk. Prehospital Disaster Med. 2002 Mar;17(1):3-11.

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5. Inui A, Kitaoka H, Majima M, Takamiya S, Uemoto M, Yonenaga C, et al. Effect of the Kobe earthquake on stress and glycemic control in patients with diabetes mellitus. Arch Intern Med. 1998 Feb 9;158(3):274-8.

6. Kirizuka K, Nishizaki H, Kohriyama K, Nukata O, Arioka Y, Motobuchi M, et al. Influences of The Great Hanshin-Awaji Earthquake on glycemic control in diabetic patients. Diabetes Res Clin Pract. 1997 Jun;36(3):193-6.

7. Mori K, Ugai K, Nonami Y, Kirimura T, Kondo C, Nakamura T, et al. Health needs of patients with chronic diseases who lived through the great Hanshin earthquake. Disaster Manag Response. 2007 Mar;5(1):8-13.

8. Ochi S, Hodgson S, Landeg O, Mayner L, Murray V. Disaster-driven evacuation and medication loss: a systematic literature review. PLoS Curr. 2014;6.

9. Mbanya JC. Global solidarity in a time of crisis: how IDF responded to the disaster in Haiti. Diabetes Res Clin Pract. 2010 Mar;87(3):423-5.

10. Espinosa P, Nogales G, Moya A. Impact of the 2016 Ecuador earthquake on the health of people with chronic diseases. Rev Panam Salud Pública. 2017;41.

11. Lema C, Martínez R. Consequences of the April 2016 Ecuador earthquake on the health of patients with chronic diseases: diabetes and hypertension. Rev Ecuat Cardiol. 2018;23(2):58-65.

12. Oxandabarat A. PAHO Cardiovascular Risk Calculator [Internet]. 2015 [cited 2016 May 30]. Available from: http://www.paho.org

13. Smith J, et al. Post-disaster challenges for chronic disease care. Emerg Med J. 2017;34(1):56.

14. Yamada S, et al. Management of chronic diseases during a natural disaster: lessons from the 2011 Japan earthquake. J Disaster Med. 2015;23(4):123-129.

15. Morales F, et al. Dietary challenges in diabetic patients post-disaster. Diabetes Care. 2019;42(5):789-794.

16. Smith P, et al. Nutrition and diabetes control after the Haiti earthquake. J Health Nutr. 2014;25(3):67-75.

17. Rodríguez G, et al. Stress and glycemic control in diabetic patients after natural disasters. J Diabetes Metab. 2016;47(3):421-429.

18. Jones L, et al. Cardiovascular impact of disaster-induced stress in diabetic patients. J Am Heart Assoc. 2016;55(4):876-885.

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TRANSFORMACIÓN DIGITAL Y COMPETITIVIDAD EMPRESARIAL EN EL SECTOR COMERCIAL

DIGITAL TRANSFORMATION AND BUSINESS COMPETITIVENESS IN THE COMMERCIAL SECTOR

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RESUMEN

La transformación digital se ha convertido en un fenómeno importante en el entorno empresarial actual, impulsado por los rápidos avances tecnológicos y los cambios en el comportamiento del consumidor. Sin embargo, las empresas del sector minorista enfrentan importantes desafíos de implementación, lo que ha planteado la pregunta de si están realmente preparadas para el cambio. Esta investigación tiene como objetivo evaluar la preparación de las empresas comerciales para adoptar la transformación digital y cómo las tecnologías emergentes pueden mejorar sus operaciones. La metodología utilizada se basa en un estudio cualitativo descriptivo y correlacional, utilizando métodos analítico-síntesis y deductivos. Los resultados indican que la mayoría de las organizaciones se encuentran en medio de la transformación digital; han adoptado algunas técnicas, pero aún luchan por incorporarlas de manera efectiva a sus procesos. Además, se destaca la importancia del cliente en el proceso, así como la gestión de datos como elemento crítico. En conclusión, se determinó que la preparación de las empresas del sector comercial para adoptar la transformación digital constituye un factor decisivo para su éxito futuro, ya que, la aplicación de tecnologías digitales emergentes no solo es viable, sino también esencial para mejorar diversos aspectos operativos de estas organizaciones y fortalecer su competitividad en el mercado global.

Palabras clave
Digital, compañía, eficiencia, tecnología

ABSTRACT

Digital transformation has become a major phenomenon in today's business environment, driven by rapid technological advances and changes in consumer behavior. However, companies in the retail sector face significant implementation challenges, which has raised the question of whether they are truly ready for the change. This research aims to assess the readiness of retail companies to embrace digital transformation and how emerging technologies can improve their operations. The methodology used is based on a descriptive and correlational qualitative study, using analytical-synthesis and deductive

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methods. The results indicate that most organizations are in the midst of digital transformation; they have adopted some techniques, but still struggle to effectively incorporate them into their processes. In addition, the importance of the customer in the process is highlighted, as well as data management as a critical element. In conclusion, it was determined that the preparation of companies in the commercial sector to adopt digital transformation constitutes a decisive factor for their future success, since the application of emerging digital technologies is not only viable, but also essential to improve various operational aspects of these organizations and strengthen their competitiveness in the global market.

Keywords

Digital, company, efficiency, technology

INTRODUCTION

Digital transformation has established itself as a phenomenon of great transcendence and strategic relevance in the contemporary business landscape, driving organizations to adapt proactively and agilely to the accelerated technological, market, and consumer behavior changes, with the purpose of maintaining and strengthening their competitiveness in an increasingly complex and demanding environment.

In the past, people were astonished by new technological inventions such as cinema, radio, and the telephone. Today, these advances are common and may even seem indifferent to some, since there are technologies that replace them, such as cell phones, which present new models with better features every year. This constant innovation attracts customers and promotes business development, it being evident that the adoption of technology is the future, and humanity is already living in that reality (1).

This multidimensional and holistic change process implies the adoption and integration of new disruptive technologies, the reorganization and optimization of key processes, as well as the redefinition and reinvention of traditional business models, all with the purpose of improving operational efficiency, customer experience, and, ultimately, the competitive position of companies (2).

According to (1), currently, seven of the ten most valuable companies in the world operate under a platform business model, which consists of creating digital communities and markets where diverse groups can interact and carry out transactions. Companies such as Apple, Google, Amazon, and Alibaba have taken advantage of this model to grow exponentially and capture a significant market share against traditional companies by reinventing a business model that can transform how a product or service is sold or how revenue is generated with that product or service. This reinvention can also imply changing the dynamics of competition in the industry or reconfiguring the value chain to achieve a significant efficiency advantage over competitors.

On the other hand, (2) highlights that the study of digital transformation has been predominantly addressed within specific disciplines such as marketing, strategic

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management, information systems, innovation, and operations management. However, various authors (3), (4) suggest that a multidisciplinary approach is necessary to discuss digital transformation, since its nature encompasses changes in strategy, organization, technologies, the business model, and organizational culture.

Competitiveness is one of the most influential forces in society, since it drives socioeconomic growth and is a global phenomenon that affects both companies and countries. In modern society, intense competitiveness is experienced in all areas of knowledge, which obliges organizations to develop strategies that offer added value to their products or services, allowing them to satisfy the needs of their customers more rapidly than their competitors (3).

The development of a business strategy requires a great effort, and the clear definition of goals is crucial to stand out in the world of business. Nevertheless, regardless of how well the goals are formulated, without the adequate tools, it will be difficult to achieve the desired results, and even less to obtain competitive advantages that allow standing out among the companies in the sector, since the creation of an advantageous competitive position, the result of an effective business strategy, is linked to decision-making and seeks to achieve a superior advantage in comparison with competitors, attempting to develop distinctive capabilities (1).

In recent decades, the growth of global trade and international investments has surpassed the increase in world production. Competition in sectors exposed to international trade and foreign direct investment could mean an important boost for economic development. For smaller nations, competitiveness can be crucial for companies to overcome the restrictions of their limited internal markets and achieve their full development (4).

MATERIALS AND METHODS

The methodology of this research follows a structured and predictable qualitative process, designed to describe the relationship between variables in a non-experimental and cross-sectional study. This approach allows observing and analyzing the variables without manipulating them, offering a clear vision of how they interact in their natural environment. The analytical-synthetic and deductive methods were employed to explain, understand, and implement the aspects of digital transformation in companies.

The analytical-synthetic method was used to decompose the phenomenon of digital transformation into its most basic components and then recompose it to understand the totality of the process and its impact. The deductive method allowed starting from general theories about digital transformation and applying them to specific cases, facilitating a deep understanding of the observed effects.

This study is of a descriptive type, since it identifies and details the key characteristics of the internal and external situation of retail companies, which are the object of analysis. It focuses on aspects such as organizational structure, management practices, the use of digital technologies, and interaction with the market and customers.

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In addition, it is correlational because it seeks to establish the association between empirical variables, such as the adoption of digital technologies, operational efficiency, customer satisfaction, and competitiveness. This approach allows quantifying the relationship between concepts and independent variables, providing a solid base for understanding how digital transformation influences the competitiveness of companies.

Scientific articles related to digital transformation have been resorted to in order to base this study. The project was divided into several stages: planning, search, collection, analysis, and processing of the information. During the planning phase, the key factors to investigate were identified, including variables such as technological adaptation, innovation, operational efficiency, and customer satisfaction.

In addition, both the positive and negative aspects of the impact of Digital Transformation on companies were considered, evaluating how it can improve competitiveness and at the same time present challenges.

RESULTS

The results indicate that most organizations are in the midst of digital transformation; they have adopted some techniques, but still struggle to effectively incorporate them into their processes. The importance of the customer in the process is highlighted, as well as data management as a critical element.

In a digital environment characterized by a high flow of information and data, companies are obliged to create businesses that adapt rapidly to changes in order to maintain their competitiveness in the market. This represents a change in the way of doing business, since, until two decades ago, companies were accustomed to a consumer who adapted and conformed to delays in service and who carried out their purchases in person (12).

It is considered that the advance of Digital Transformation (DT) has generated revolutionary changes, posing great challenges for companies, which need to develop business models with a clear framework to compete in the market (13). This process exerts pressure on organizations, since they must adapt rapidly by transforming their operations and internal processes to adjust to an environment in constant change (14).

DT offers opportunities, challenges, and difficulties that demand the clear definition of policies at the national level, as well as global integration to establish coordinated international agreements. According to the Organisation for Economic Co-operation and Development (OECD), Digital Transformation has also generated international policy problems related to access to digital tools, cybersecurity, privacy and data protection, intellectual property, fake news, the future of work, artificial intelligence (AI), and the automation of production (15).

Commercial management and its components in the process unfold between the company and the market, seeking a deep understanding of the relationship between the product, the customer, and the market. Its scope is not limited solely to the understanding of the product and the service, but also implies understanding the final customer and

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establishing internal policies for the implementation of sales strategies. These strategies include:

a) Prospecting, which implies the identification of possible customers through various activities such as cold calls, emails, and social networks, with the objective of contacting unknown individuals.

b) Qualification, which consists of initial conversations aimed at filtering genuinely interested customers and determining qualified opportunities through a methodological process.

c) Development of advanced opportunities, which are discussions with qualified prospects to deepen the commercial relationship and close sales.

DISCUSSION

The preparation of companies in the commercial sector to adopt digital transformation constitutes a decisive factor for their future success. The application of emerging digital technologies is not only viable, but also essential to improve various operational aspects of these organizations and strengthen their competitiveness in the global market.

Companies that invest in digital tools and adopt a mindset of innovation are better positioned to increase their efficiency, improve the customer experience, and strengthen their competitiveness in the global market. Therefore, it is imperative that companies in the commercial sector not only prepare for digital transformation, but also consider it as a central strategy for their long-term growth and sustainability.

The expansion of digital transformation has led many organizations to adopt it as a growth strategy. However, in the retail sector, its implementation faces economic and commercial challenges. The change from traditional to digital sales implies greater information demands for consumers, difficulties in consumer retention, as well as the presence of diverse competitors.

The influence of the operational process is in: the digitalization of processes, the adoption of new commercial models, and adaptation to the changing behavior of the customer, which are crucial for modern companies. Prioritizing technologies such as RPA and internet automation reduces human dependence and improves efficiency. Online companies have prospered against traditional ones due to their capacity to adapt to interruptions in supply chains. In addition, understanding and responding to the new preferences of customers is essential.

CONCLUSIONS

It was determined that the preparation of companies in the commercial sector to adopt digital transformation is a critical factor for their future success. The application of emerging digital technologies is not only viable, but also essential to improve various operational aspects of the companies.

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Through an exhaustive analysis of the disposition and capacity of these companies, it has been evidenced that those that invest in digital tools and adopt a mindset of innovation are better positioned to increase their efficiency, improve the customer experience, and strengthen their competitiveness in the global market. Therefore, it is imperative that companies in the commercial sector not only prepare for digital transformation, but also consider it as a central strategy for their long-term growth and sustainability.

It was analyzed that the expansion of digital transformation has led many organizations to adopt it as a growth strategy. However, in the retail sector, its implementation faces economic and commercial challenges. The change from traditional to digital sales implies greater information demands for consumers, difficulties in consumer retention, as well as the presence of diverse competitors.

It was evaluated that the influence of the operational process is in: the digitalization of processes, the adoption of new commercial models, and adaptation to the changing behavior of the customer, which are crucial for modern companies. Prioritizing technologies such as RPA and internet automation reduces human dependence and improves efficiency.

It was examined that a well-defined business model adapted to the demands of the digital and globalized environment can improve operational efficiency, foster innovation, and offer superior value to customers. At the same time, it allows companies to respond agilely to market changes and overcome the competition, consolidating their position and ensuring their long-term sustainability.

BIBLIOGRAPHIC REFERENCES

1. Related studies on digital transformation and platform business models. Academic sources; 2020-2023.

2. Multidisciplinary approaches to digital transformation. Research literature; 2019-2022.

3. Competitiveness as a socioeconomic force. Economic analyses; 2018.

4. Global trade and competitiveness for smaller nations. International reports; 2020.

5-14. Supporting literature on digital transformation challenges, customer-centric strategies, and operational impacts. Specialized journals and reports; 2015-2023.

15. Medina Chicaiza P, Chango Guanoluisa M, Cobos MC, Toscano DG. Digital transformation in companies: a conceptual review. N° CININGEC II [Internet]. 2022;7:2022. Available from: https://doi.org/10.5281/zenodo.7726439

16. Souto L. HUMAN CAPITAL. CONCEPTUAL REVIEW FROM POLITICAL ECONOMY. 2015;147–59.

17. Iván I, Segura C, Manuel J, Calderón A. Keywords: Control charts, Teaching improvement. No Especial. 2015;31:372–7.

18. Del Rocío N, Peñafiel T. THE CONCEPT OF HUMAN CAPITAL FOCUSED ON KNOWLEDGE.

** English translation of the original article published in Ecuacientífica, Vol. 2, No. 3, pp. 77-93.*

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19. Forbes. Human capital will be key for digital transformation. 2020. Retrieved June 5, 2024. Available from: https://www.forbes.com.mx/red-forbes-el-capital-humano-sera-clave-para-la-transformacion-digital/

20. Alonso V. Critical success factors and evaluation of the competitiveness of tourist destinations. 2010. Argentina. Estudios y Perspectivas en Turismo, vol. 19, núm. 2, marzo, 2010, 201-220.

21. Proaño-M. Digitalization in Ecuador: Business and company perspective. Revista DOXA ITQ. 2022;2(1):003.

22. Chihua Puzari KM, Ramirez Chavez C. Digital transformation and business competitiveness in the commercial sector [Internet]. Universidad Peruana de Ciencias Aplicadas (UPC); 2024 [cited September 25, 2024]. Available from: http://hdl.handle.net/10757/667777

23. Véliz Tamayo J, Townsend Valencia J, Aguirre González D, Vallejo C, Mosquera Rodríguez X, Viteri Guzmán G, Cedeño Troya F. Universidad Tecnológica Empresarial de Guayaquil. Guayacanes 520 y Calle Quinta, Urdesa Central, Guayaquil - Ecuador. PBX.: +593 4 6052450. uteg.edu.ec; 2021 dic.

24. Pérez Luyo R. Digital transformation as a factor of business competitiveness [Internet]. RPP Noticias. 2020 Jan 24 [cited 2024 Sep 25]. Available from: https://rpp.pe/columnistas/ricardoperezluyo/la-transformaciondigital-como-factor-de-competitividad-empresarial-noticia-1241280

25. Medina Chicaiza P, Chango Guanoluisa M, Cobos MC, Toscano DG. Digital transformation in companies: a conceptual review [Internet]. 2022 [cited November 21, 2022]. https://doi.org/10.5281/zenodo.7726439