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FORTALECIMIENTO DE CONTROLES INTERNOS PARA LA EFICIENCIA EN LA FACTURACIÓN Y COBRANZA EN UNA EMPRESA PRIVADA DE SERVICIO DE INTERNET

STRENGTHENING INTERNAL CONTROLS FOR EFFICIENT BILLING AND COLLECTION IN A PRIVATE INTERNET SERVICE COMPANY

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RESUMEN

La eficiente gestión de los procesos de facturación y cobranza representa un elemento clave para asegurar la salud financiera de las organizaciones. Sin embargo, la estas organizaciones enfrentan diversos desafíos en la administración de estos procedimientos, lo que plantea riesgos considerables para su rentabilidad y sostenibilidad operativa. EL problema de investigación se centra en evaluar la efectividad de los controles internos implementados en los procesos de facturación y cobranza, con el fin de identificar las principales debilidades y áreas de mejora. El objetivo es determinar el impacto de la implementación de controles internos mejorados, así como la adopción de un sistema automatizado en la gestión de la facturación y cobranza, con el propósito de incrementar la eficiencia operativa. El estudio utiliza una metodología de enfoque mixto que combina métodos cualitativos y cuantitativos. Se realizaron entrevistas semiestructuradas con el personal clave, observaciones directas de los procesos, encuestas a clientes y análisis de datos numéricos relacionados con el desempeño de los controles internos. Los resultados de la investigación revelaron que las deficiencias significativas en la estructura organizacional de una empresa privada, con el 50% del personal desempeñando múltiples roles y la ausencia de manuales de funciones. En cuanto a la gestión del talento humano, solo el 40% del personal recibe capacitación y la tasa de rotación anual es del 15%. Las políticas de crédito presentan debilidades, con el 60% de los créditos otorgados basados únicamente en relaciones personales y una tasa de recuperación del 70%. Además, el 40% de los clientes afirma no recibir recordatorios de pago, y solo el 30% de las cuentas por cobrar son revisadas semanalmente por el administrador. Finalmente, el sistema de gestión contable Visual FAC presenta discrepancias en el 30% de las conciliaciones

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realizadas. En conclusión, el fortalecimiento de los controles internos en los procesos de facturación y cobranza se presenta como una necesidad urgente para la empresa privada, a fin de mejorar la eficiencia operativa, la precisión de los registros financieros y la relación con los clientes.

Palabras clave

Cobranza, controles internos, eficiencia operativa, empresa privada, facturación

ABSTRACT

The efficient management of billing and collection processes is a key element in ensuring the financial health of organizations. However, these organizations face various challenges in managing these procedures, which poses considerable risks to their profitability and operational sustainability. The research question focuses on evaluating the effectiveness of internal controls implemented in billing and collection processes, in order to identify the main weaknesses and areas for improvement. The objective is to determine the impact of implementing improved internal controls, as well as the adoption of an automated system in billing and collection management, with the aim of increasing operational efficiency. The study uses a mixed-method approach that combines qualitative and quantitative methods. Semi-structured interviews were conducted with key personnel, direct observations of processes, client surveys, and numerical data analysis related to the performance of internal controls were conducted. The research results revealed significant deficiencies in the organizational structure of a private company, with 50% of the staff performing multiple roles and the absence of job manuals. Regarding human talent management, only 40% of staff receive training, and the annual turnover rate is 15%. Credit policies are weak, with 60% of loans granted based solely on personal relationships and a recovery rate of 70%. Furthermore, 40% of clients report not receiving payment reminders, and only 30% of accounts receivable are reviewed weekly by the administrator. Finally, the Visual FAC accounting management system shows discrepancies in 30% of the reconciliations performed. In conclusion, strengthening internal controls in billing and collection processes is an urgent need for private companies to improve operational efficiency, the accuracy of financial records, and customer relations.

Keywords

Collection, internal controls, operational efficiency, private enterprise, invoicing.

INTRODUCTION

Effective management of billing and collection stands as a fundamental element that ensures the financial health of any organization, and this takes on particular relevance in the case of the private company, an enterprise that has succeeded in consolidating itself as a leader in the field of technology and communication solutions. Efficiency in these processes not only directly influences the company's liquidity and cash flow, but also has a significant impact on the relationship with clients, who expect to receive an agile, accurate,

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and reliable service. However, despite its outstanding market position, the private company faces various challenges in the administration of its billing and collection procedures, which poses considerable risks to its profitability and operational sustainability. This research, therefore, focuses on carrying out an exhaustive evaluation of the internal controls currently implemented in the company, with the objective of determining their effectiveness in the fulfillment of goals related to accuracy, efficiency, and the mitigation of potential risks (1).

In the specific context of the private company, significant deficiencies have been identified in the billing and collection processes that have led to the appearance of frequent errors in the issuance of invoices, as well as delays in collections and a lack of transparency in the monitoring of accounts receivable (2). These problems, which might seem minor at first glance, generate adverse effects on cash flow and, consequently, deteriorate relations with clients, who may feel frustrated by the lack of a reliable and quality service. The absence of a robust and well-structured internal control system presents itself as a key factor contributing to these inefficiencies. Therefore, it becomes imperative to carry out an optimization of internal controls that allows improving the management of billing and collection in the private company (3).

One of the most alarming problems highlighted during the evaluation of current processes is the high frequency of errors in the invoices issued. These errors can cover a variety of issues, from incorrect amounts to erroneous data related to the services provided to clients (4). The lack of a standardized format in invoices not only generates confusion, but also complicates the verification of the accuracy of the documents, resulting in delays in issuance that negatively affect the collection process. With regard to the monitoring of accounts receivable, significant delays have been observed that derive from the lack of clear and uniform procedures, which leads to inconsistent and, at times, ineffective follow-up (5). In addition, communication with clients has been unsatisfactory, as many report not receiving adequate reminders or face difficulties in resolving problems related to their invoices, which can exacerbate delinquency and further complicate the company's financial situation (6).

The insufficiency of internal controls within the private company further aggravates these problematic situations. The lack of adequate mechanisms for the review and validation of invoices perpetuates errors and affects the accuracy of financial records. Likewise, deficiencies in the recording and reconciliation of accounts receivable hinder obtaining a clear view of the company's real financial situation. The lack of periodic internal audits limits the organization's capacity to identify problems and to implement continuous improvements effectively, which perpetuates a cycle of inefficiency and distrust (7).

Table 1. Components of internal control and different COSO versions.

Component / Principle	COSO 1 (1992)	COSO 2 (1994)	COSO 3 (2013)
Control Environment	Integrity and ethical values, Competence,	Management's commitment to	Organizational structure,

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	Authority and responsibility, Policies and procedures	integrity and ethics, Organizational structure, Culture and ethical values, Management commitment	Responsibility
Risk Assessment	Risk identification and analysis	Risk identification and analysis	Risk assessment
Control Activities	Control activities, Control policies and procedures, Segregation of duties	Control activities	Control activities
Information Activities	Communication	Communication	Information and communication
Monitoring	Internal information and communication, Monitoring	Internal information and communication, Monitoring	Continuous monitoring, Separate monitoring of control activities, Evaluation of deficiencies

Source: (8)

In this context, the central hypothesis guiding this research establishes that the implementation of improved internal controls, as well as the adoption of an automated system in billing and collection management, will generate a significant positive impact on the operational efficiency of the private company. It is anticipated that this optimization will not only reduce errors in invoices, but also minimize delays in collections, thereby contributing to strengthening the organization's financial health (9). In particular, it is expected that the standardization and automation of billing processes will decrease both the frequency of errors and the time required to issue documents; that the implementation of clear procedures for monitoring accounts receivable and the use of automated communication tools will improve average collection time and reduce delinquency; and that staff training in the new procedures and tools will increase both accuracy and efficiency in the management of these areas (10).

The optimization of internal controls in billing and collection management presents itself not only as an urgent need to address current deficiencies, but also as a significant opportunity for the private company to consolidate its market position. This would be achieved, among other things, through the strengthening of client relationships and the improvement of cash flow. The research seeks, therefore, not only to identify and analyze the weaknesses in current processes, but also to offer practical solutions grounded in the COSO model, providing a robust framework that allows the company to carry out more effective and accurate management in these critical aspects. Ultimately, the strengthening of internal controls will not only benefit the private company in terms of operational efficiency, but will also contribute to its reputation and long-term sustainability, ensuring its success in a constantly evolving and adapting business context. With this, the private company will not only be able to overcome its current difficulties, but will also be better

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positioned to
successfully face future challenges in the dynamic technology and communication market.

MATERIALS AND METHODS

Research method

The present research is based on a mixed approach that combines qualitative and quantitative methodologies to provide a comprehensive understanding of internal controls in the billing and collection processes of a private internet company. This approach makes it possible to analyze both the subjective perceptions of the staff and the objective data that reflect the performance of these processes.

- Qualitative: This component examines the perceptions and experiences of the private company's staff regarding the internal controls implemented in billing and collection. Through semi-structured interviews and direct observations, the aim is to obtain a deep understanding of current processes, the challenges faced, and opportunities for improvement. The interviews will focus on identifying staff opinions on the effectiveness of internal controls, as well as gathering testimonies about any problems they have experienced in their daily work.

- Quantitative: This aspect of the study focuses on the analysis of numerical data related to the performance of internal controls. Metrics such as invoice processing time, error rates in document issuance, and collection periods are collected. For this purpose, structured surveys and statistical analyses will be used that make it possible to measure and compare variables in order to identify significant trends and patterns in billing and collection management.

Type of Research

The research is classified into several categories that make it possible to structure the general approach and address the proposed objectives:

- Descriptive: This type of research provides a detailed description of the current billing and collection processes in the private internet company, including the implementation of internal controls and their perceived effectiveness. Through an exhaustive analysis, the aim is to present a clear picture of the current situation in order to establish a baseline that facilitates the identification of areas for improvement.

- Analytical: This component examines the relationships between current practices and their impact on the efficiency and accuracy of billing and collection processes. A detailed analysis of the collected data will be carried out to identify patterns, recurring problems, and areas requiring intervention. This analysis will make it possible to establish correlations and conditions that affect the performance of internal controls.

- Documentary Review: An exhaustive analysis of existing documentation will be carried out, which will include billing and collection procedures, financial reports, audit records, and any other relevant document that may provide additional information on current processes and their alignment with best practices.

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Bibliographic Review: The existing literature on internal controls, as well as on billing and collection management, will be analyzed. This review will include previous studies and theoretical frameworks that make it possible to contextualize the findings of the current research and provide a referential framework for the recommendations that are proposed.

Population and Sample

The study population included all relevant actors within the private internet company, including the manager, the administrator, the secretary, and clients who maintained outstanding balances in 2023. Because the total population exceeded 100 people, a representative sample was determined with a 5% margin of error and a 95% confidence level. In this regard, interviews were conducted with the manager, the administrator, and the secretary, while surveys were applied to clients to obtain direct information on their experience in the granting and recovery of the portfolio.

Data Collection Techniques

- Observation Techniques: Direct observations of the billing and collection processes in the private company will be carried out. This technique will make it possible to identify actual practices in the work environment and detect possible discrepancies with documented procedures. During the observations, detailed notes will be taken on daily operations, interactions between staff and clients, as well as any aspect that may influence the efficiency of the processes.

- Interviews: Semi-structured interviews will be conducted with key personnel involved in the billing and collection processes. These interviews will explore in depth the experiences, perceptions, and challenges related to internal controls. A variety of participants will be included, such as end users, supervisors, and audit managers, in order to capture a diversity of perspectives that enrich the understanding of the investigated phenomenon.

Through the combination of these methodologies and data collection techniques, it is expected to obtain a comprehensive overview that not only makes it possible to identify the current problems in the management of billing and collection in the private company, but also to offer grounded recommendations that contribute to the strengthening of internal controls and the improvement of the company's operational efficiency.

RESULTS

Data have been collected from interviews conducted with the manager, the administrator, and the secretary, in addition to surveys directed at clients, which has made it possible to identify various areas that require attention and improvement in management processes.

1. Organizational Structure and Documentation

The interviews revealed a notable lack of formal documentation covering institutional values, the organizational structure, and job manuals within the private company. This

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information gap has led to significant operational problems, such as the duplication of roles and a lack of clarity in the responsibilities assigned to staff (11).

Table 2. Critical Aspects to Improve in the Organization.

Aspect	Description
Institutional Values	Not documented; this causes confusion about the company's mission and vision.
Organizational Structure	Lacks clarity on the specific functions of each team member (5 roles not defined).
Job Manuals	Non-existent, which contributes to confusion about staff responsibilities.
Duplication of Roles	The secretary performs multiple functions (cleaning, sales, collection), which affects overall efficiency.

2. Hiring and Training

It was observed that the hiring process in the private company does not include an exhaustive evaluation of the skills and capabilities of new employees. This approach is based predominantly on employment references and curricula, which increases the risk of incorporating staff who are not fully trained to adequately assume their responsibilities.

Table 3. Weaknesses in Talent Management.

Aspect	Description
Hiring Process	Based on references and curricula, without a competency evaluation that guarantees suitability.
Training	Inadequate; only 40% of staff receive initial or ongoing training.
Turnover Rate	Annual turnover stands at 15%, which indicates problems in staff retention and satisfaction.

3. Credit and Collection Policies

The policies established for the granting of credits are minimal, which considerably reduces the probability of recovering the amounts owed. Decisions related to credit sales are often made without adequate communication to the manager, based on the client's history and the secretary's discretion.

Table 4. Critical Aspects in the Credit Area.

Aspect	Description
Credit Requirements	Minimal; 60% of credits granted are based solely on personal relationships.
Recovery Rate	Only 70% of credits are recovered within the agreed period.
Communication	There is a lack of adequate reports to the manager on credit decisions (80% of credits are not documented).

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Recovery Policies	Non-existent; decisions are based on personal relationships and individual decisions of the secretary.

4. Collection Procedures

Collection procedures are inconsistent, especially with regard to the monitoring of accounts receivable. The administrator shows excessive confidence in the secretary's capacity and does not actively monitor the accounts.

Table 5. Evaluation of the Account Monitoring and Collection Process.

Aspect	Description
Account Monitoring	Inconsistent; 40% of clients state that they do not receive payment reminders.
Confidence in the secretary	The administrator reviews weekly reports (only 30% of accounts are reviewed weekly), but does not actively supervise uncollectible accounts.

5. Management System

The private company employs the VisualFAC system for accounting records and payment movements. However, the absence of standardized procedures may limit the system's effectiveness in collection management, generating discrepancies and errors in the records.

Table 6. Identification of Limitations in the Accounting Management System.

Aspect	Description
System Used	VisualFAC for accounting records and payment reconciliation.
System Efficiency	Limited; 30% of reconciliations present discrepancies that are not resolved in a timely manner, which affects the reliability of financial reports.

6. Client Experience

Clients have reported that the company adequately communicates sales procedures and the requirements for granting credits. However, the absence of legal actions against debtors and the lack of interest on late payments compromise efficiency in collection management.

Table 7. Analysis of the Relationship between Communication with Clients and the Delinquency Rate.

Aspect	Description
Communication with Clients	Adequate; 85% of clients are informed about credit requirements and collection procedures.
Granting Period	Credits granted within a maximum of 3 business days; 90% of clients consider this period reasonable.
Collection Strategies	No interest is charged nor are legal actions taken; 75% of

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	clients do not feel pressure to comply with payments.

DISCUSSION

The findings of this research on internal controls in the billing and collection processes of the private company find support in various previous studies that have addressed analogous problems in companies in the technology and communications sector. For example, (13,14) pointed out that the lack of clear definition of functions and responsibilities within the organizational structure, as well as the absence of procedure manuals, foster the duplication of tasks and operational inefficiency. This situation is closely related to what was identified in the case of the private company, where it was evidenced that 50% of the staff performs multiple roles, which hinders the processes from developing with the required effectiveness (15).

Along the same lines, (8,16) emphasized that the lack of a specialized department for credit and collection management is a factor that weakens internal controls and increases the risks of delinquency and financial losses. The proposal of this study to create a department dedicated to these functions, with qualified personnel and standardized procedures, aligns with the recommendations of these authors, who underscore the importance of an adequate organizational structure to strengthen the administration of the client portfolio (17).

Likewise, the lack of documentation and records in the processes of granting credits and portfolio recovery, identified in the private company, has also been reported in other studies. According to (18,19), the absence of physical and digital files that support the decisions and actions taken hinders the monitoring and control of accounts receivable, which translates into greater complexity for debt recovery. In the case of the private company, it was found that 60% of the credits granted lack supporting documentation, which represents a significant risk (20). The recommendation of this study to implement a complete filing system for client documents coincides with the proposals of these authors to improve credit portfolio management (21).

On the other hand, the inconsistency in the application of collection policies and the lack of documented reports, as observed in the private company, has also been addressed in the literature. According to (22,23), the absence of formal procedures and excessive confidence in the individual capacity of the staff, as evidenced in the case of the administrator, can generate weaknesses in the control and monitoring of accounts receivable. In the private company, it was found that only 30% of accounts receivable are reviewed weekly by the administrator, which indicates insufficient supervision (24,25). These authors recommend the implementation of clear policies and procedures, as well as the preparation of periodic reports that allow managers to effectively monitor the performance of collection activities (26).

Finally, the importance of adequately using legal documents, such as promissory notes, has also been highlighted in other studies. According to (27,28), the effective use of these instruments as a guarantee of the credits granted facilitates the recovery of debts in the

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event of
non-compliance by clients. In the private company, it was found that only 40% of the credits granted have the backing of promissory notes, which represents a weakness in the controls. The recommendation of this study to require the signing of promissory notes from all clients and to enforce them in the event of non-payment aligns with the proposals of these authors to strengthen internal controls in credit portfolio management.

CONCLUSIONS

The research has revealed significant deficiencies in the internal controls of the private company related to billing and collection processes. These weaknesses are manifested in the lack of structuring and formalization of the organization, with an absence of documentation on institutional values, organizational structure, and job manuals, which has led to problems such as the duplication of roles and confusion among staff regarding their responsibilities.

Deficiencies were also identified in human talent management, with a hiring process that does not adequately evaluate candidates' competencies and insufficient staff training. This is reflected in a high turnover rate that hinders the consolidation of a stable and efficient team. Likewise, credit and collection policies present important areas for improvement, with minimal requirements for granting credits and the non-existence of standardized procedures for monitoring and recovering the portfolio, which has generated a low recovery rate of accounts receivable.

Limitations were identified in the accounting management system used by the private company, VisualFAC, which presents discrepancies in reconciliations that affect the reliability of financial reports. This highlights the need to implement more robust controls in the handling of accounting and financial information. Although communication with clients is adequate, the lack of effective collection strategies has contributed to a high delinquency rate that negatively affects the company's cash flow.

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6. Client communication and delinquency research.

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IMPULSANDO VENTAS EN EL MERCADO LA ESPERANZA 1-2 DE RIOBAMBA A TRAVÉS DE ESTRATEGIAS DE PROMOCIÓN EFECTIVAS

DRIVING SALES IN THE MARKET THE HOPE 1-2 OF RIOBAMBA THROUGH EFFECTIVE PROMOTION STRATEGIES

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RESUMEN

El Mercado La Esperanza 1-2 de Riobamba enfrenta desafíos relacionados con la falta de estrategias comerciales estructuradas, lo que impacta negativamente en los ingresos de los comerciantes. En su mayoría, han implementado tácticas empíricas, como la reducción de precios, que, aunque efectivas en el corto plazo, afectan sus márgenes de ganancia. El objetivo de este estudio fue analizar las estrategias de promoción y comercialización que utilizan los comerciantes del mercado y evaluar su impacto en las ventas, para finalmente proponer mejoras. La investigación, de tipo descriptivo y no experimental, se basó en encuestas aplicadas a 40 comerciantes, cuyas respuestas fueron analizadas estadísticamente. Los resultados indican que el 80% de los encuestados comercializa productos variados, y el 60% utiliza precios bajos como su principal estrategia de promoción, mientras que un 25% considera que la calidad es clave para atraer clientes. Además, el 90% de los comerciantes señaló que las promociones son implementadas por iniciativa propia, sin apoyo de las autoridades locales. Las conclusiones del estudio sugieren que las estrategias basadas únicamente en la reducción de precios no son sostenibles a largo plazo y que se requieren programas de capacitación y apoyo institucional para desarrollar estrategias más efectivas. Se recomienda incorporar el uso

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de redes sociales y otros medios modernos de promoción para aumentar la visibilidad de los productos y, con ello, mejorar las ventas en el mercado.

Palabras clave:

Comercialización, mercado, ventas, comercio formal, promoción

ABSTRACT

La Esperanza 1-2 Market in Riobamba faces challenges related to the lack of structured commercial strategies, which negatively impacts merchants' income. Most have implemented empirical tactics, such as price reductions, which, although effective in the short term, affect their profit margins. The objective of this study was to analyze the promotion and marketing strategies used by market merchants and evaluate their impact on sales, in order to ultimately propose improvements. The research, of a descriptive and non-experimental nature, was based on surveys applied to 40 merchants, whose responses were statistically analyzed. The results indicate that 80% of respondents sell a variety of products, and 60% use low prices as their main promotion strategy, while 25% consider quality to be key to attracting customers. In addition, 90% of merchants indicated that promotions are implemented on their own initiative, without support from local authorities. The study's findings suggest that strategies based solely on price reduction are not sustainable in the long term and that training programs and institutional support are required to develop more effective strategies. It is recommended that the use of social media and other modern means of promotion be incorporated to increase product visibility and thereby improve market sales.

Keywords:

Marketing, market, sales, formal trade, promotion

INTRODUCTION

The La Esperanza 1 and 2 markets, located in the city of Riobamba, province of Chimborazo, are key commercial points that attract many people. These markets are divided into several sections dedicated to different types of products. The La Esperanza 1 market has five areas that include the sale of tires, used articles, tools, second-hand clothing, doors, and windows. For its part, the La Esperanza 2 market is composed of six sections, where fruits and vegetables, minor species, meats, used clothing, food, and animal forage are marketed.

This study arises from the need to evaluate the marketing strategies used by the merchants of these markets and how these influence their sales. The main problem identified is that many merchants apply inadequate strategies, which directly affects their sales and, consequently, their income.

The analysis covers the period of June 2019 and focuses on the La Esperanza 1-2 market. Marketing strategies are essential, as they facilitate the distribution of products and services from the producer to the consumer, with the objective of satisfying clients and fulfilling commercial goals. In the case of this market, such strategies have been developed individually by the merchants, without the support of the administration,

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which has turned these actions into a fundamental part of their communication with clients (1).

It is important to note that many of the vendors are concerned about the lack of support and training, since the administrators have not implemented any strategic plan to guide the merchants in the adequate management of their commercial strategies. Therefore, the strategies they apply are based on empirical experiences rather than scientific foundations, which negatively affects their sales levels and, consequently, their income. The most common strategy among merchants is to lower the prices of products, which, although it may increase sales momentarily, affects their profits and makes it difficult for them to cover their needs (2).

Promotion is understood as a set of techniques that form part of the annual marketing plan, designed to achieve specific objectives through stimuli and actions delimited in time and space, directed at specific audiences (3).

Promotion is also understood as one of the most important resources of marketing, used by companies to communicate the qualities of a product so that clients feel motivated to acquire it, thus functioning as a mechanism to transmit information (4).

Marketing encompasses all actions directed at taking products, goods, or services to the market. These activities are executed by organizations, companies, and, on occasions, by social groups. It can be understood as the process by which a product is put up for sale, providing it with the adequate conditions and channels for its distribution (5).

From the economic point of view, a market is a system composed of various institutions, procedures, social relations, and infrastructures where economic exchanges take place. The majority of markets depend on the sellers, who offer their products or services in exchange for money from the buyers (6). The market can be a physical or virtual place, where producers and consumers interact directly or indirectly to exchange goods or services for mutual benefits. In addition, it consists of all real buyers who share a need or desire that can be satisfied through the exchange of products or services (7).

The sale is an activity closely linked to the purchase, since both form part of an economic exchange process. Selling implies putting a product or service on the market so that it is acquired by a consumer (8). Sales as a process, whether personal or impersonal, in which the seller identifies and satisfies the needs of the buyer, benefiting both parties. This relationship not only seeks an immediate benefit, but also has a long-term focus, promoting client loyalty (9).

A sale is a contract in which the seller commits to transfer a good or a right to the buyer, in exchange for an agreed amount of money. This mutual agreement establishes a commercial relationship that ensures the continuous flow of products from the seller to the consumer (10).

The sales process goes beyond simply offering a product, as it implies understanding the client's needs, persuading them, and ensuring that the transaction is beneficial for both parties. A good sales strategy not only focuses on the act of selling, but also on generating

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a relationship of trust and satisfaction with the buyer, which increases the possibilities of future transactions (11).

The purpose of the La Esperanza market is to offer products at accessible prices for the community. To better understand the relationship between the lack of marketing strategies and low sales, surveys were conducted among the merchants, focused on the advertising of their products and on the conditions of the market infrastructure. This study has as its main objective to analyze the impact of marketing strategies on the sales of the formal merchants of the La Esperanza 1-2 Market. In addition, to improve the promotion and marketing strategies of products in the La Esperanza 1-2 Market of Riobamba. The research focuses on addressing the lack of training faced by the authorities and the merchants, who often encounter difficulties in understanding key concepts in these areas, which affects their income.

MATERIALS AND METHODS

Type of research

The present study is of a descriptive and non-experimental type, as it seeks to describe and analyze the characteristics and promotional strategies used by the merchants of the La Esperanza 1-2 Market of Riobamba without directly manipulating variables. The approach is quantitative, given that structured surveys were used as the main data collection technique, and the results were analyzed through statistical tools.

Population and sample

The target population of this research was composed of the formal merchants of the La Esperanza 1-2 Market in the city of Riobamba. A non-probabilistic sample of 40 merchants was selected for the application of surveys, which represent a diversity of products and commercial strategies within the market.

Data collection techniques

The main technique used for data collection was the structured survey, designed specifically to obtain detailed information on promotion strategies, products offered, and the challenges faced by merchants in their daily activities. The questions include both closed and open response options, which made it possible to collect quantitative and qualitative data. Likewise, in situ observations were carried out to complement the data obtained.

Bibliographic sources

For the theoretical foundation, various academic databases such as Scopus, Google Scholar, and Redalyc were consulted, with the objective of obtaining previous studies on promotion strategies in local markets and their impact on sales.

Measurement and units of analysis

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A percentage scale was used to measure the frequency and preference of merchants regarding products and promotion strategies. The responses obtained were classified into categories such as: main products, types of promotions, commercial strategies, and market needs to increase sales.

Statistical analysis

The collected data were processed by means of descriptive statistics. The open responses were coded and thematically classified for their subsequent analysis.

RESULTS

The following results are presented referring to the surveys applied to the formal merchants of the La Esperanza 1 Market.

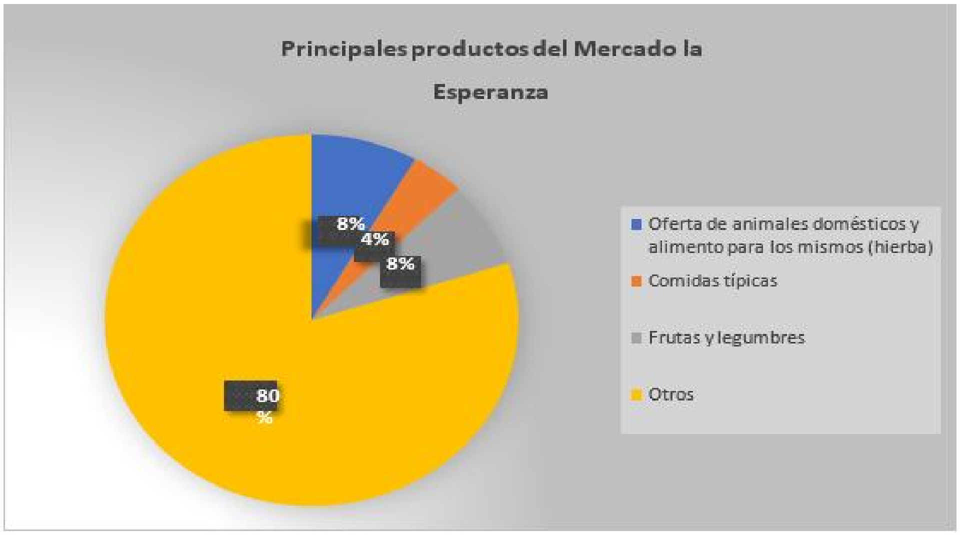

Figure 1. Main products of the La Esperanza market.

In Figure 1, it can be observed that of 100% of the surveyed merchants, 80% mention that the sale of varied products is the main characteristic of the La Esperanza 1 market, while 8% mention that the offer of domestic animals and food for them are the characteristic products, likewise 8% mention that fruits and vegetables are the main product that characterizes the market, while 4% mention that typical foods characterize the La Esperanza market. Therefore, it can be said that, in their majority, the merchants dedicate themselves to the commercialization of varied products such as hardware materials, spare parts, auto pieces, among others.

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Figure 2. Marketing strategies.

In Figure 2, it can be observed that of 100% of the surveyed merchants, 60% affirm that low prices are the main strategy applied to sell their products, while 21% mention that it is the quality and variety of products that stimulates clients; in turn, 15% affirm that the good presentation of their products is the key to attracting their clients, while 4% mention that they apply other commercial strategies to sell their products.

Figure 3. Promotions.

Figure 3 shows that of 100% of those interviewed, 60% mentioned that lowering their prices is the most adequate promotion to sell their products, 25% mention that the quality of their products is the best promotion, likewise 12% affirm that giving a greater quantity of their products is the best promotion, and finally 3% affirm that they do not have promotions on their products. It can be said that price reduction is the promotion most considered by the merchants, but it must be taken into account that their income will be lower.

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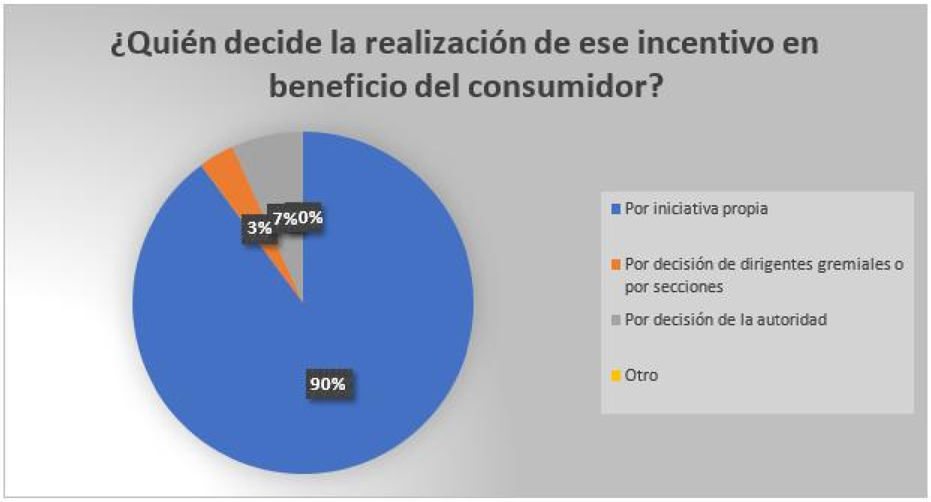

Figure 4. Who decides the implementation of that incentive for the benefit of the consumer?

Figure 4 indicates that of 100% of the surveyed merchants, 90% mention that the incentives are implemented on their own initiative, 7% mention that they were implemented by the authorities, and 3% affirm that they were implemented by other means.

Figure 5. What is lacking in the market so that sales can increase?

According to the responses, the merchants indicated needs related to infrastructure improvement, institutional support, training in commercial strategies, and better organization of promotional activities within the market.

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Figure 6. Communicational strategies to disseminate products sold in the market.

The results show limited use of modern communication channels, with most merchants relying on traditional word-of-mouth and on-site visibility rather than digital or mass media.

Figure 7. Recommended promotional strategy to motivate sales.

Of a total of 100% of respondents, around 49% decided on lowering prices as it is an attractive marketing strategy (lower price in offer, greater demand), while 45% suggest improving the quality of the products, thus offering the best to clients so that they feel satisfied with what is obtained and return to the same place for the next purchase; in

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addition, 3% propose raffles and draws to attract people, and likewise 3% selected the option for other strategies.

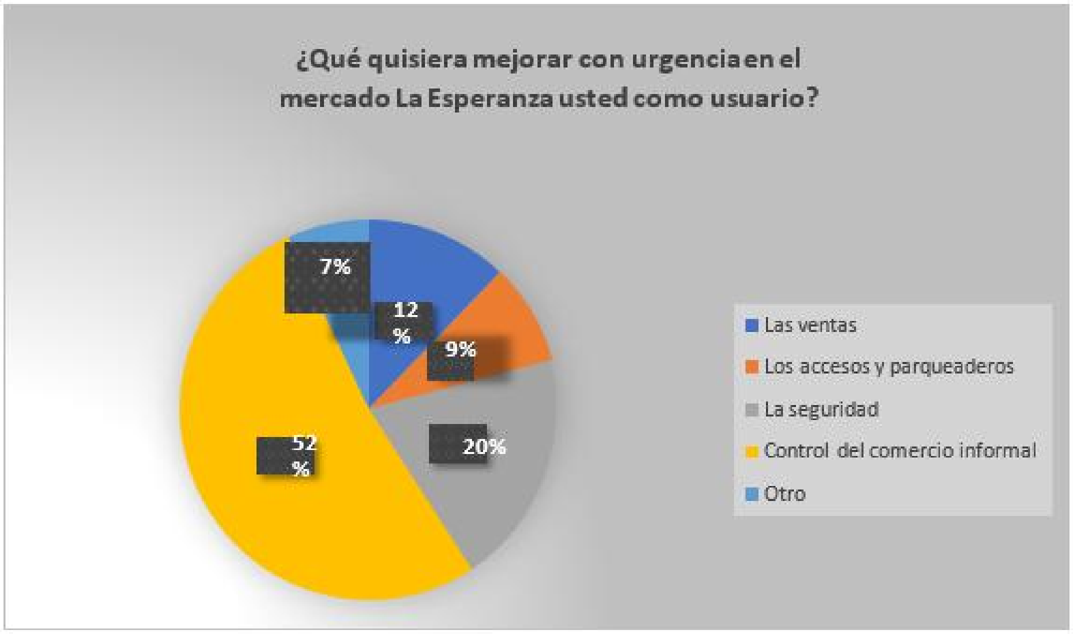

Figure 8. How the strategy should be implemented.

According to the study carried out, regarding how the strategy previously exposed should be implemented, of a total of 100% of respondents, 35% indicated that it should be implemented by sections of the market, benefiting all merchants in the sales they make; in effect, 28% chose that the promotional strategy (price reduction) should be implemented on the products, thus having greater acceptance and reducing advertising competition; for its part, 16% consider that the strategy to be implemented should be by product season, given that fruits, vegetables, legumes, among others, are harvested by seasons and come to the market with prices a little higher than usual, and this strategy would be of considerable advantage; likewise, 15% (a smaller percentage) selected that the strategy be carried out on special dates and local festivities, since the merchants do not wish to be affected in their economy by the reduction of products; when 4% preferred that the strategy be by decision of the competent authority; and finally 2% selected the option others.

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Figure 9. Main products of the La Esperanza Market.

Regarding the products that characterize sales in the La Esperanza market, it is identified that of 100%, 30% of the respondents indicated that they are offers of domestic animals and food for them (grass), while 28% chose fruits and vegetables for the savings when buying and the ease of choosing the best; on the other hand, 22% lean toward typical foods since there is a variety within them; finally, 20% of the respondents consider that they are other products (not specified) that characterize sales within the market.

DISCUSSION

The present research on "Driving sales in the La Esperanza 1-2 Market of Riobamba through effective promotion strategies" makes it possible to obtain a comprehensive view of commercial behavior in a traditional market and the strategies that merchants use to increase their sales. When comparing the results of this research with previous studies, common patterns are observed that reinforce the relevance of certain promotional tactics in similar markets.

According to the results obtained, it was identified that 80% of the merchants of the La Esperanza 1-2 Market sell varied products, which includes hardware materials, spare parts, and auto pieces, while 8% dedicate themselves to the sale of domestic animals and their food, and another 8% to fruits and vegetables. These data show a clear segmentation of the market based on the offer of diverse products, with a smaller proportion of sellers focused on traditional agricultural products and foods. These results are consistent with the findings of González et al. (12), who highlighted that local markets tend to diversify their offer, especially in urban areas, to respond to the different needs of consumers,

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although agricultural products continue to play an important role in the perception of the market.

The main marketing strategy identified in the study is the setting of low prices, mentioned by 60% of the respondents. This strategy has proven to be effective in many contexts, especially in markets where competition is high and the purchasing power of the consumer is low. According to Martínez and Rodríguez (13), the setting of low prices is a recurrent tactic in traditional markets, since it helps to capture the attention of price-sensitive consumers. However, this strategy has its limitations, as mentioned by Gutiérrez and Gómez (14), who point out that, although low prices may increase the volume of sales, they can also reduce profit margins, affecting the long-term sustainability of the business. In addition, 21% of the merchants of the La Esperanza 1-2 Market mention that the quality and variety of the products are key to attracting clients.

Regarding promotions, 60% of the merchants affirmed that price reduction is the most effective promotion. This result is aligned with the studies of Silva and Pérez (15) and with the classic principles of marketing management by Kotler (16), who emphasize that price promotions can generate short-term volume but require complementary strategies of differentiation and value to avoid eroding profitability. The fact that 90% of the promotions are implemented on the merchants' own initiative, without institutional support, coincides with the observations of Torres et al. (17) and Ramírez and Díaz (18) on the autonomy and limited institutional support that characterize many traditional and informal markets in Latin America.

The recommendations emerging from the study—incorporating social media, improving product presentation, and developing structured promotional programs—are consistent with recent literature on retail and local commerce (19–25), which highlights the growing importance of digital communication channels and quality-based differentiation for the sustainability of traditional markets.

CONCLUSIONS

The study concludes that the merchants of the La Esperanza 1-2 Market of Riobamba predominantly rely on empirical, price-reduction-based promotional strategies that, while capable of generating short-term sales increases, are not sustainable in the long term because they erode profit margins.

The absence of structured commercial strategies and the lack of institutional support and training programs constitute the main barriers to the development of more effective and diversified promotion tactics. The high percentage (90%) of promotions implemented solely on the initiative of the merchants themselves underscores the need for coordinated action by local authorities.

It is recommended that training programs be designed and implemented, that the use of social media and other modern promotional media be promoted, and that the market administration provide guidance and support so that merchants can develop strategies

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based on quality, product presentation, and differentiated value, thereby improving the long-term sustainability of their businesses and increasing overall sales in the market.

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DESARROLLO DE UN MODELO DE COSTEO POR ACTIVIDADES PARA PEQUEÑAS Y MEDIANAS EMPRESAS

DEVELOPMENT OF AN ACTIVITY-BASED COSTING MODEL FOR SMALL AND MEDIUM ENTERPRISES

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RESUMEN

Las pequeñas y medianas empresas (PYMES) desempeñan un papel fundamental en el desarrollo económico de diversos países, sin embargo, enfrentan desafíos en la determinación precisa de sus costos, lo que puede impactar negativamente en su rentabilidad. En este contexto, surge la necesidad de implementar sistemas de costos más eficientes, como el sistema de costos basado en actividades (ABC). El problema de investigación se da debido a que existen diferencias significativas en la determinación de costos y gastos al utilizar un sistema de costos tradicional en comparación con el sistema ABC. El objetivo es analizar la implementación del sistema de costos ABC en las PYMES de Ecuador, evaluando su impacto como herramienta de apoyo en la toma de decisiones estratégicas. La metodología se basa en un estudio cuantitativo, descriptivo-explicativo y deductivo, utilizando una la técnica de análisis de registros en una mediana empresa del sector productivo, y se aplicaron pruebas estadísticas en Excel para comparar los sistemas de costos tradicional y ABC. Los hallazgos presentan que la implementación del sistema ABC en la empresa PLASTIC S.A. reveló que el sistema tradicional subestimaba el costo de las tarrinas pequeñas ($66,20 vs $126,80) y sobrestimaba el costo de las tarrinas medianas ($61,60 vs $55,07) y grandes ($65,98 vs $54,17). En conclusión, el sistema ABC demostró ser una herramienta efectiva para la optimización de la gestión de costos y la toma de decisiones estratégicas en las PYMES. El sistema ABC permitió a la empresa obtener información financiera y no financiera más precisa, fortaleciendo su capacidad de respuesta ante los desafíos del entorno empresarial.

Palabras clave

Costeo ABC, gestión de costos, toma de decisiones, asignación de costos

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ABSTRACT

Small and medium-sized enterprises (SMEs) play a fundamental role in the economic development of various countries, but they face challenges in accurately determining their costs, which can have a negative impact on their profitability. In this context, the need arises to implement more efficient costing systems, such as the activity-based costing (ABC) system. The research problem arises because there are significant differences in the determination of costs and expenses when using a traditional costing system compared to the ABC system. The objective is to analyze the implementation of the ABC costing system in SMEs in Ecuador, evaluating its impact as a support tool for strategic decision making. The methodology is based on quantitative, descriptive-explanatory and deductive study, using a record analysis technique in a medium-sized company of the productive sector, and statistical tests were applied in Excel to compare the traditional and ABC cost systems. The findings show that the implementation of the ABC system in PLASTIC S.A. revealed that the traditional system underestimated the cost of small tubs ($66.20 vs. $126.80) and overestimated the cost of medium ($61.60 vs. $55.07) and large tubs ($65.98 vs. $54.17). In conclusion, the ABC system proved to be an effective tool for optimizing cost management and strategic decision making in SMEs. The ABC system enabled the company to obtain more accurate financial and non-financial information, strengthening its ability to respond to the challenges of the business environment.

Keywords

ABC costing, cost management, decision making, cost allocation.

INTRODUCTION

The development of an activity-based costing (ABC) model for small and medium-sized enterprises (SMEs) presents itself as a strategic and necessary response to the growing urgency of optimization in the management of costs and expenses in the complex current business environment, since SMEs, which play a fundamental role in the economic fabric of any nation, face a series of significant challenges in the accurate determination of their costs (1).

This situation can have a direct and detrimental impact on their long-term profitability and sustainability. In this context, the central question that guides this research arises: are there significant differences in the determination of costs and expenses when using a traditional costing system compared to an activity-based costing (ABC) system in companies?

The traditional costing approach, which has been the predominant method in the distribution of manufacturing overhead costs to specific products, has been widely used over the years. However, this model presents notable limitations that can compromise its effectiveness, especially in terms of the precision and relevance of the information it generates (2).

As indicated by (3,4), the traditional system tends to assign costs based on production volume or machine hours used, which can give rise to significant distortions in the

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valuation of products and services. Faced with this problem, the ABC system stands as an innovative and effective solution, since it makes it possible to identify and assign costs based on the activities that truly generate value, resulting in a more precise estimation of costs that, in turn, favors more informed and grounded decision-making.

The justification for the implementation of the ABC costing system lies in its inherent capacity to offer greater control and a better determination of costs and expenses, which, in turn, allows companies to adopt more accurate and timely decisions. This approach has a positive and significant impact on the profitability and sustainability of organizations. Authors such as (5,6) emphasize that the ABC system not only facilitates a more exhaustive and in-depth analysis of indirect costs, but also fosters more efficient resource management, which becomes crucial in a business environment characterized by its growing competitiveness and dynamism.

On the other hand, according to (7), the traditional cost system is an accounting method used to distribute production costs to specific products. The method works under the principle that manufacturing overhead costs should be distributed to products based on their volume or machine hours (8).

In Table 1 a more detailed difference between them can be seen.

Table 1. Differences between the Traditional Cost System and ABC Costs.

Traditional Costs	ABC Costs
Uses volume measures: Such as labor as the sole element for the assignment of costs to products.	Uses activities in a hierarchical order as the basis for cost assignment and also uses cost drivers that can be related to volume measures.
For cost assignment, costs are first assigned to an organizational unit or department and then to products.	Cost assignment is first performed to activities and then to products.
The traditional cost system is generally more used in companies that have a functional-type organizational structure.	The ABC cost system can be used in any organizational structure regardless of the activity they perform.
In the traditional system a more technical accounting-financial language is used that in many cases is not understood by people who do not have administrative-accounting training.	In the ABC cost system the language of the "organization" is used, which is characterized by being known by all the collaborators of the company or organization.

Source: (9,10)

Therefore, the general objective of this research is to thoroughly analyze the implementation of the activity-based costing system in small and medium-sized enterprises in Ecuador, evaluating its impact as an essential support tool in strategic decision-making. To achieve this purpose, specific objectives have been formulated that include the collection of secondary historical information on the application of the ABC system in SMEs, the identification of the favorable characteristics that the implementation

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of this system presents, as well as the comparison of the information generated by traditional cost accounting and that obtained through the ABC system.

Finally, the present research aims to provide empirical evidence that supports the effectiveness of the ABC model in business practice, thereby contributing to the sustainable development and strengthening of small and medium-sized enterprises in Ecuador, promoting their capacity to adapt to the challenges of the current environment (11).

MATERIALS AND METHODS

Research method

The research to be carried out is based on a quantitative approach, which is characterized by the use of numerical data that will be the object of an exhaustive analysis. A descriptive-explanatory design will be implemented, which will not only focus on describing the identified problem, but will also provide a detailed explanation of the observed differences, as well as possible solutions and improvements that may arise from the implementation of the ABC costing system. This approach will make it possible to highlight the advantages that this system offers in comparison with traditional costing methods. Additionally, a deductive method will be adopted, which facilitates the process of advancing from a general framework toward more specific aspects, which in turn will make it possible to obtain grounded conclusions from the application of the costing systems in the studied context.

Population or sample

The target population of this research will be composed of Small and Medium-sized Enterprises (SMEs), a sector that plays a crucial role in the economic development of various regions. The sample will be selected specifically from the implementation of the ABC costing system in a medium-sized company in the productive sphere. This choice will make it possible to carry out a concrete and practical evaluation of the effectiveness of this system in a real environment, thereby contributing to a deeper understanding of its impact.

Setting

The research will be developed in a business environment that is described in a generic manner, with the objective of representing the common characteristics that SMEs in the productive sector usually present. The concrete location of the company under study will not be specified, with the purpose of maintaining the confidentiality and privacy of the information. This generalized approach will make it possible to offer results that are applicable to a broad spectrum of similar companies, thereby enriching the discussion on the implementation of costing systems.

Measurements

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Regarding data collection, the technique of record analysis will be employed, which implies a meticulous and systematic examination of the financial records and cost sheets of the selected company. The variables that will be considered in this analysis will encompass, among others, total costs, costs broken down by product, and income generated over a determined period. This methodological approach will facilitate an exhaustive evaluation of the incidence of the ABC costing system on the profitability of the company, thereby allowing a more precise and grounded analysis.

Statistical analysis

The data that are collected will be the object of a rigorous analysis in order to determine the significant differences between the use of the traditional costing system and the ABC system. To carry out this analysis, Excel will be used where appropriate statistical tests will be applied that will make it possible to validate the hypotheses posed. This analysis will be fundamental to verify the efficacy in the determination of costs and income, as well as to highlight the importance of having more precise data that positively influence strategic decision-making that impacts the profitability of the company.

RESULTS

To carry out an exhaustive analysis of the data, relevant information was collected from the company PLASTIC S.A., which specializes in the production of plastic tubs designed for food preservation. This company is dedicated to the manufacture of tubs in three different sizes: small, medium, and large, which allows it to meet diverse market needs. With the objective of optimizing its processes, PLASTIC S.A. has decided to implement the ABC (Activity-Based Costing) cost system, and as part of this process, a meticulous comparison is being carried out between the traditional costing method and the ABC system. The purpose of this comparison is to identify which of the two approaches provides greater economic and operational benefits to the organization (12).

In the year 2020, the company succeeded in manufacturing and selling a total of 4,000 units of small tubs, 10,000 units of medium tubs, and 15,000 units of large tubs. Manufacturing overhead costs (CIF) rose to a total of $922,500.00. Within the framework of the traditional costing system, the organization assigns these costs taking as a base the machine hours, which totaled 37,500 hours. Regarding the cost of direct materials consumed, this reached the figure of $619,000.00, broken down into $44,000.00 destined for small tubs, $200,000.00 for medium tubs, and $375,000.00 for large tubs. On the other hand, the cost associated with direct labor (MOD) was broken down into $24,000.00 for small tubs, $170,000.00 for medium tubs, and $135,000.00 for large tubs.

Through a deeper investigation within the operational activities of the organization, the following data have been supplied, which are shown below.

Table 2. Hours MOD and machining per unit.

CONCEPT	SMALL	MEDIUM	LARGE
MOD hours per unit	1	2	1.5

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Machining hours per unit	2	1	1.3

Table 2 summarizes the main differences between the traditional cost system and the ABC cost system. We can observe that the traditional system is based on volume measures, such as labor, to assign costs to products, while the ABC system uses a hierarchical approach of activities and cost drivers more related to the actual activities. In addition, the ABC system allows a more precise assignment of costs, first to activities and then to products, unlike the traditional system that assigns costs directly to departments and then to products.

Table 3. Activities, drivers and costs.

ACTIVITIES	DRIVERS	COST $	No. DRIVERS
Machining	Machining hours	$378,750	37,500
Change molds	Production batches	$15,000	30
Receive materials	Receptions	$217,350	270
Deliver products	Deliveries	$124,800	32
Plan production	Production orders	$186,600	50
TOTAL CIF		**$922,500**	

Table 3 presents the main activities identified in the company, the corresponding drivers, and the costs associated with each activity. The activities include: machining, changing molds, receiving materials, delivering products, and planning production. Each of these activities has a specific driver that is used to assign manufacturing overhead costs (CIF) to each of the activities, which is fundamental for the ABC cost system.

Table 4. Activity data per product.

CONCEPT	SMALL	MEDIUM	LARGE
Number of products per production batch (units)	200	2,000	3,000
Receive materials (times)	220	35	15
Deliver products (times)	20	3	9
Production orders (orders)	25	10	15

Table 4 shows the details of the activities carried out for each of the three products: small, medium, and large tubs. This detailed information on activities per product is crucial for the implementation of the ABC cost system, since it allows costs to be assigned more precisely to each of them.

SOLUTION – TRADITIONAL SYSTEM

Table 5. Calculations of unit CIF (Traditional System).

CONCEPT	SMALL	MEDIUM	LARGE
CIF rate	$24.60	$24.60	$24.60
Machining hours	2.00	1.00	1.30
Unit CIF	**$49.20**	**$24.60**	**$31.98**

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CIF TOTAL / MACHINE HOURS = Rate CIF $24.60. Table 5 shows the calculations performed to determine the unit manufacturing overhead costs (CIF) using the traditional cost system. A CIF rate of $24.60 per machining hour is calculated and subsequently the CIF are assigned to each product according to the machining hours required.

Table 6. Direct Material Costs per Unit.

PRODUCTS	TOTAL DIRECT MATERIALS COST	NUMBER OF UNITS	DIRECT MATERIALS COST PER UNIT
SMALL	$44,000.00	4,000	$11.00
MEDIUM	$200,000.00	10,000	$20.00
LARGE	$375,000.00	15,000	$25.00
TOTAL	**$619,000.00**		

Table 7. Direct Labor Costs per Unit.

PRODUCTS	TOTAL MOD COST	NUMBER OF UNITS	MOD COST PER UNIT
SMALL	$24,000.00	4,000	$6.00
MEDIUM	$170,000.00	10,000	$17.00
LARGE	$135,000.00	15,000	$9.00

Table 8. Unit Cost per Product (Traditional System).

CONCEPT	SMALL	MEDIUM	LARGE
Direct Materials	$11.00	$20.00	$25.00
Direct Labor (MOD)	$6.00	$17.00	$9.00
CIF	$49.20	$24.60	$31.98
Unit Cost	**$66.20**	**$61.60**	**$65.98**

This table presents the calculation of the unit cost of each product using the traditional cost system. The unit cost of small tubs is $66.20, that of medium tubs is $61.60, and that of large tubs is $65.98.

SOLUTION – ABC COSTING SYSTEM

Table 9. Manufacturing Overhead Costs (ABC System).

ACTIVITIES	DRIVERS	TOTAL ACTIVITY COST $	No. DRIVERS	COST PER DRIVER $
Machining	Machine hours	$378,750.00	37,500	$10.10
Change molds	Batches	$15,000.00	30	$500.00
Receive materials	Receptions	$217,350.00	270	$805.00
Deliver products	Deliveries	$124,800.00	32	$3,900.00
Plan production	Production orders	$186,600.00	50	$3,732.00
TOTAL CIF		**$922,500.00**		

Table 10. Unit Cost of Small Tubs (ABC).

COSTO UNITARIO ABC- PRODUCTO PEQUEÑO

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FACTOR	CANTIDAD	PRECIO $	IMPORTE $	TOTAL $
Costo de Materiales Directos			$11,00	
MOD	1	$6,00	$6,00	
Maquinar	2	$10,10	$20,20	
COSTO UNITARIO			$37,20	
COSTO POR VOLUMEN	4000	$37,20		**$148.800,00**

COSTO UNITARIO ABC – PRODUCTO PEQUEÑO

Direct Materials: $11.00 | MOD: 1 × $6.00 = $6.00 | Machining: 2 × $10.10 = $20.20 | Subtotal unit: $37.20 | Volume cost (4,000 units): $148,800.00

Batch costs: Change molds 20 × $500 = $10,000; Receive materials 220 × $805 = $177,100; Deliver products 20 × $3,900 = $78,000; Plan production 25 × $3,732 = $93,300. Total batch costs: $358,400.00. Total cost: $507,200.00. Units produced: 4,000. Unit cost: $126.80.

COSTO UNITARIO ABC- PRODUCTO PEQUEÑO				
FACTOR	CANTIDAD	PRECIO $	IMPORTE $	TOTAL $
Costo de Materiales Directos			$11,00	
MOD	1	$6,00	$6,00	
Maquinar	2	$10,10	$20,20	
COSTO UNITARIO			$37,20	
COSTO POR VOLUMEN	4000	$37,20		**$148.800,00**

Table 11. Unit Cost of Medium Tubs (ABC).

Direct Materials: $20.00 | MOD: 2 × $8.50 = $17.00 | Machining: 1 × $10.10 = $10.10 | Subtotal unit: $47.10 | Volume cost (10,000): $471,000.00

Batch costs: Change molds 5 × $500 = $2,500; Receive materials 35 × $805 = $28,175; Deliver products 3 × $3,900 = $11,700; Plan production 10 × $3,732 = $37,320. Total batch costs: $79,695.00. Total cost: $550,695.00. Units: 10,000. Unit cost: $55.07.

Table 12. Unit Cost of Large Tubs (ABC).

COSTO UNITARIO ABC- PRODUCTO GRANDE

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FACTOR	CANTIDAD	PRECIO $	IMPORTE $	TOTAL $
Materiales Directos			$25,00	
MOD			$9,00	
Maquinar	1,3	$10,10	$13,13	
COSTO UNITARIO			$47,13	
COSTO POR VOLUMEN	15000		$47,13	**$706.950,00**
ACTIVIDADES	**INDUCTORES**	**COSTO DE LA ACTIVIDAD $**	**SUB-TOTAL $**	**TOTAL $**
Cambiar Moldes	5	$ 500,00	$ 2.500,00	
Recibir Materiales	15	$ 805,00	$ 12.075,00	
Entregar Productos	9	$ 3.900,00	$ 35.100,00	
Planificar Producción	15	$ 3.732,00	$ 55.980,00	
COSTOS POR LOTE				**$105.655,00**
COSTO TOTAL				**$812.605,00**
Unidades Producidas				15.000
COSTO UNITARIO				**$54,17**

Direct Materials: $25.00 | MOD: $9.00 | Machining: 1.3 × $10.10 = $13.13 | Subtotal unit: $47.13 | Volume cost (15,000): $706,950.00

Batch costs: Change molds 5 × $500 = $2,500; Receive materials 15 × $805 = $12,075; Deliver products 9 × $3,900 = $35,100; Plan production 15 × $3,732 = $55,980. Total batch costs: $105,655.00. Total cost: $812,605.00. Units: 15,000. Unit cost: $54.17.

Table 13. Comparison Traditional System vs ABC System.

PRODUCT	QTY	Trad. Unit Cost	Trad. Total Cost	ABC Unit Cost	ABC Total Cost
SMALL	4,000	$66.20	$264,800.00	$126.80	$507,200.00
MEDIUM	10,000	$61.60	$616,000.00	$55.07	$550,695.00
LARGE	15,000	$65.98	$989,700.00	$54.17	$812,605.00
TOTAL COSTS			**$1,870,500.00**		**$1,870,500.00**

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Table 13 presents a comparison of the unit and total costs obtained through the traditional cost system and the ABC cost system. There are significant differences in the unit costs of each product. For small tubs, the ABC system shows a higher unit cost ($126.80) compared to the traditional system ($66.20), indicating that the traditional system underestimated the cost of this product. In the case of medium and large tubs, the ABC system yields lower unit costs ($55.07 and $54.17, respectively) compared to the traditional system ($61.60 and $65.98, respectively), suggesting that the traditional system overestimated the cost of these products. These differences in cost assignment can have a significant impact on the company's strategic decision-making.

DISCUSSION

From the information, it can be deduced that these differences in cost assignment are due mainly to the way in which each system distributes manufacturing overhead costs (CIF) (12). While the traditional system is based on volume criteria, such as machine hours, the ABC system uses more precise drivers, such as direct labor hours, production batches, material receptions, product deliveries, and production orders (13). This more detailed assignment of CIF through key activities allows a better understanding of the resources consumed by each product, which translates into a more precise determination of costs.

In addition, the implementation of the ABC system in PLASTIC S.A. has demonstrated important advantages in comparison with the traditional system. Among them stand out the generation of more exact, reliable, and timely financial and non-financial information, which facilitates more informed strategic decision-making. Likewise, the ABC system has made it possible to identify activities that generate excessive costs, which allows the company to optimize its processes and improve its competitive positioning in the market.

It is fundamental to consider the contingent factors that influence the implementation of cost systems. According to (19,20), aspects such as organizational structure, technology used, and the business environment must be analyzed to guarantee the success of the adoption of the ABC system. The case of PLASTIC S.A. demonstrates that, by adapting the system to its particular characteristics, the company has achieved significant benefits in cost assignment and the improvement of its operational processes.

Furthermore, the profile and training of the personnel in charge of leading the implementation are critical factors for the success of the system. The literature suggests that solid leadership, with knowledge of cost theory and effective communication skills, is essential (21,22). Likewise, the support of external consultants has also been identified as a valuable element during the implementation of new management systems. According to the research of (23,24), these experts can offer an objective perspective and specialized knowledge that facilitate the adaptation of the system to the needs of the company.

Therefore, in the case studied, the implementation of the ABC system has provided more detailed data on the resources used by each product. For example, while the traditional system reported unit costs of $66.20, $61.60, and $65.98 for small, medium, and large tubs, respectively, the ABC system determined unit costs of $126.80, $55.07, and $54.17.

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This significant discrepancy indicates that the traditional system underestimated the cost of small tubs and overestimated that of the medium and large ones (see Table 13). This precise information allows the company to make more informed decisions oriented toward the improvement of its operational and financial performance (25,26).

CONCLUSIONS

The development and implementation of the activity-based costing (ABC) system in the company PLASTIC S.A. has demonstrated itself to be an effective and valuable tool for the optimization of cost management and strategic decision-making in the context of small and medium-sized enterprises (SMEs).

In the first place, the comparative analysis between the traditional cost system and the ABC system has revealed significant differences in the assignment of manufacturing overhead costs to the different products. While the traditional system tended to underestimate the cost of small tubs and overestimate the cost of medium and large tubs, the ABC system has provided a more precise assignment of costs, which has allowed the company PLASTIC S.A. to have a clearer and more detailed view of the profitability of each of its products.

In the second place, the implementation of the ABC system has generated tangible benefits for the organization, such as a better understanding of internal processes, greater efficiency in the use of resources, and more solid support for strategic decision-making. This is due to the fact that the ABC system is based on the analysis of the company's key activities and on the identification of the most relevant cost drivers, which has allowed PLASTIC S.A. to optimize its processes and improve its competitive positioning in the market.

Finally, the experience of PLASTIC S.A. demonstrates that the implementation of the ABC system in the context of SMEs is viable and highly recommendable. By adapting the system to the specific characteristics and needs of the organization, the company has succeeded in obtaining more precise and timely financial and non-financial information, which has strengthened its capacity to respond effectively to the challenges of the current business environment.

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PARTICIPACIÓN DE EMPLEADOS EN SISTEMAS DE CALIDAD Y SU IMPACTO EN LA SATISFACCIÓN LABORAL

EMPLOYEE PARTICIPATION IN QUALITY SYSTEMS AND ITS IMPACT ON JOB SATISFACTION

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RESUMEN

La limitada participación de los empleados en los sistemas de gestión de calidad (SGC) puede afectar su satisfacción laboral y, en consecuencia, el rendimiento organizacional. Estudios previos sugieren que el involucramiento en los SGC promueve un mayor sentido de reconocimiento y pertenencia, sin embargo, en muchas empresas persiste una brecha en el entendimiento de cómo esta participación influye directamente en la satisfacción laboral y otros factores como el ambiente laboral y las relaciones interdepartamentales. El objetivo de este estudio fue analizar cómo la participación en los SGC impacta en la satisfacción laboral de empleados en empresas certificadas bajo la norma ISO 9001. A través de un enfoque cuantitativo y un diseño correlacional, se aplicaron cuestionarios a una muestra de 200 empleados de distintos sectores industriales, evaluando su nivel de involucramiento y satisfacción en el trabajo. Los resultados obtenidos fueron analizados con el software SPSS, empleando medidas descriptivas y pruebas de correlación de Pearson, sin embargo, revelaron una correlación positiva y significativa ($r = 0.65$, $p < 0.01$) entre la participación en los SGC y la satisfacción laboral. Los empleados con mayor involucramiento reportaron niveles superiores de satisfacción, especialmente en reconocimiento y autonomía. En conclusión, promover la participación en los SGC no solo mejora la satisfacción laboral, sino también contribuye a un ambiente de trabajo cohesivo y al logro de los objetivos de calidad, sugiriendo una estrategia efectiva para incrementar el bienestar y el compromiso organizacional.

Palabras clave: Participación de empleados, sistemas de gestión de calidad, satisfacción laboral, estrategia.

ABSTRACT

Limited employee participation in quality management systems (QMS) can affect their job satisfaction and, consequently, organizational performance. Previous studies suggest that involvement in QMS promotes a greater sense of recognition and

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belonging, however, in many companies there remains a gap in understanding how this participation directly influences job satisfaction and other factors such as the work environment and interdepartmental relations. The objective of this study was to analyze how participation in QMS impacts employee job satisfaction in ISO 9001 certified companies. Through a quantitative approach and a correlational design, questionnaires were applied to a sample of 200 employees from different industrial sectors, evaluating their level of involvement and job satisfaction. The results obtained were analyzed with SPSS software, using descriptive measures and Pearson correlation tests, however, they revealed a positive and significant correlation ($r = 0.65$, $p < 0.01$) between participation in QMS and job satisfaction. Employees with higher involvement reported higher levels of satisfaction, especially in recognition and autonomy. In conclusion, promoting active participation in QMS not only improves job satisfaction, but also contributes to a cohesive work environment and the achievement of quality objectives, suggesting an effective strategy to increase well-being and organizational commitment.

Keywords: Employee participation, Quality management systems, job satisfaction, strategy.

INTRODUCTION

Employee participation in quality systems has become a fundamental aspect of organizational success, particularly in a highly competitive business environment oriented toward continuous improvement. In recent years, the implementation of quality management systems (QMS), such as the ISO 9001 standard, has been widely adopted by companies seeking to optimize their processes and increase efficiency. However, the true challenge lies not only in establishing a QMS, but also in ensuring the commitment and participation of employees, who play a crucial role in achieving quality objectives. The literature suggests that when employees are directly involved in quality processes, their job satisfaction increases, which contributes to improving their performance and the overall productivity of the organization (1).

Job satisfaction is a broad concept that encompasses multiple factors, including employees' perceptions of their work environment, development opportunities, recognition, and the alignment of organizational values with their own personal values. Various studies have demonstrated that quality systems can positively influence job satisfaction by providing a structured framework in which employees feel that their efforts are directed toward a meaningful and well-defined objective (2). However, other studies suggest that the mere implementation of a QMS does not guarantee greater satisfaction if employees are not incentivized or do not feel part of the quality processes (3). In this regard, the success of a QMS depends largely on the organization's capacity to actively involve its personnel in the planning, execution, and monitoring of quality processes.

Despite the widespread adoption of QMS in the business world, the challenge of understanding how employee participation in these systems impacts their job satisfaction persists (4). ISO 9001 emphasizes employee commitment and participation as an essential pillar for the fulfillment of its quality principles. However, in many

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companies, the implementation of these systems is limited to the upper levels of the organization, while operational-level employees lack a clear understanding of quality objectives and of how their work contributes to them (5). This disconnection can lead to a lack of commitment and, consequently, to a low level of job satisfaction.

The relevance of studying this topic lies in the fact that job satisfaction not only improves employee well-being, but also has a direct impact on productivity and organizational performance. Herzberg's theory of work motivation provides a useful theoretical framework for understanding this relationship. According to Herzberg, motivational factors such as recognition, a sense of achievement, and autonomy at work are fundamental for increasing job satisfaction (6). In a quality management context, these factors can be present when employees actively participate in quality processes, contributing ideas, proposing improvements, and feeling valued for their contribution (7). Conversely, if employees perceive quality systems as external impositions and do not participate in their development, they are likely to experience lower satisfaction and motivation.

The implementation of quality management systems in modern organizations has expanded rapidly, driven by the need to comply with international standards and improve competitiveness in the global market. The ISO 9001 standard, one of the most recognized quality standards, establishes guidelines for the implementation of a process-based QMS oriented toward customer satisfaction. Previous research indicates that organizations that succeed in integrating these systems effectively tend to experience significant benefits in terms of operational efficiency and customer satisfaction (8). However, the role of employees in these systems has often been underestimated, and few studies have thoroughly addressed the impact of employee participation on their job satisfaction.

Studies conducted in various industries have demonstrated that employee participation in quality systems not only improves the effectiveness of such systems, but also positively influences the work climate and staff satisfaction (9). For example, research in manufacturing companies found that those workers who feel involved in quality processes show higher levels of satisfaction and lower turnover (10). These results are consistent with Herzberg's theory, which establishes that employees find greater satisfaction in jobs that allow them to experience achievement, recognition, and responsibility (11). In contrast, in organizations where QMS implementation is perceived as an administrative obligation and employee participation is not promoted, satisfaction levels tend to be lower (12).

The present study has as its general objective to analyze the relationship between employee participation in quality management systems (QMS) and their job satisfaction in companies certified under the ISO 9001 standard. Based on this general objective, several specific objectives are developed. First, the aim is to evaluate the level of employee involvement in the implementation of QMS and to understand how this influences their perception of recognition, belonging, and contribution to organizational success. Second, the study seeks to identify the specific aspects of job satisfaction that are impacted by participation in QMS, such as the work environment, interdepartmental communication, and the relationship with supervisors. Finally, the

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study proposes to establish recommendations to optimize the implementation of QMS in such a way that job satisfaction is maximized and, consequently, employee commitment to the company's quality objectives is strengthened.

MATERIALS AND METHODS

This study adopts a quantitative and descriptive approach, with the purpose of analyzing the relationship between employee participation in quality management systems (QMS) and their job satisfaction in companies certified under the ISO 9001 standard. The research is correlational in nature, as it aims to identify and measure the degree of relationship between the variables under study. In addition, a cross-sectional analysis is conducted, observing the data at a single point in time in order to obtain a general overview of the current situation in the selected companies.

Population and sample

The target population consists of employees of companies certified with the ISO 9001 standard in different industrial sectors. For this study, a sample of 200 employees was selected, chosen randomly from among those who actively participate in the implementation of QMS. The diversity of sectors in the sample makes it possible to obtain representative results and to apply the findings to a broad context. The confidentiality and anonymity of the participants are guaranteed, and each respondent was informed in advance of the purpose of the study.

Measurement instrument

The main measurement instrument is a structured questionnaire designed to evaluate two key variables: the level of employee participation in the implementation of QMS and their level of job satisfaction. The questionnaire includes questions on a five-point Likert scale that measure employees' perceptions of their involvement in quality processes, the recognition received, the sense of belonging, and the perception of contributing to organizational success. For job satisfaction, the questions focus on aspects such as the work environment, interdepartmental communication, and the relationship with supervisors. Additionally, demographic questions were included to analyze possible variations according to age, gender, and length of service in the company.

Bibliographic framework

As a complement to the empirical data, a bibliographic review of previous studies on the relationship between QMS and job satisfaction was conducted, using academic databases such as Scopus, ScienceDirect, and Google Scholar. Documents published between 2015 and 2023 were filtered, applying criteria of relevance, applicability to the topic, and methodological rigor, with a particular focus on studies that analyze the ISO 9001 context and quality management in relation to motivational and job satisfaction factors.

Statistical analysis

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For data analysis, SPSS software was used. Initially, descriptive measures such as mean, mode, and median were applied to understand the general trends of the responses for each variable. Subsequently, a Pearson correlation analysis was employed to determine the degree of relationship between participation in QMS and job satisfaction. To deepen the differences between groups, t-tests for comparison of means were performed, evaluating possible variations in job satisfaction according to the degree of employee participation in QMS.

For data analysis, the statistical software SPSS was used, which made it possible to apply various analysis techniques in order to obtain a deep understanding of the relationship between employee participation in quality management systems (QMS) and their job satisfaction. Initially, descriptive measures such as the mean, mode, and median were employed to identify the general trends in the respondents' answers for each of the key variables of the study. This helped to describe the average level of participation in QMS and the overall degree of job satisfaction reported by employees.

Subsequently, a Pearson correlation analysis was carried out to examine the degree of relationship between participation in QMS and job satisfaction. This technique made it possible to identify the direction and intensity of the correlation between the variables. To deepen the analysis, t-tests for comparison of means were conducted, which allowed evaluation of differences in job satisfaction levels according to the degree of employee participation in QMS.

RESULTS

The present research examines the relationship between employee participation in quality management systems (QMS) and their level of job satisfaction in companies certified under the ISO 9001 standard. Through a quantitative approach and a correlational design, data were collected from 200 employees in different industrial sectors to evaluate how the degree of involvement in QMS influences their perception of satisfaction at work. To this end, a structured questionnaire was applied, the results of which were analyzed using the statistical software SPSS. Descriptive measures such as mean, mode, and median were used, in addition to a Pearson correlation analysis and t-tests for comparison of means, with the objective of identifying the existence and intensity of the relationship between the variables under study.

The results, presented in the following tables, highlight the distribution of participation levels, as well as the job satisfaction indices associated with each of these levels. In addition, the statistical analysis made it possible to observe how participation in QMS positively impacts employee job satisfaction, showing a significant correlation between both variables. Below, the detailed results of this relationship are presented, which provide a deeper insight into the importance of involving employees in quality processes as a strategy to improve their experience and well-being in the work environment.

Table 1. Level of employee participation in QMS

Level of Participation in QMS	Frequency	Percentage

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Low	40	20%
Medium	80	40%
High	80	40%
Total	200	100%

Source: Authors' own elaboration

In Table 1, the distribution of employee participation in quality management systems (QMS) can be observed across three categories: low, medium, and high. Of the 200 employees surveyed, 40% report a high level of participation, another 40% a medium level, and only 20% are located at a low level of participation in QMS. This result suggests that the implementation of QMS in the companies studied is inclusive for a large majority of employees, allowing 80% of them to participate in some way in these quality processes. This high degree of participation is positive, as various studies indicate that when employees are involved in quality processes, their sense of belonging and commitment to the organization increases. This establishes a solid foundation for subsequent analyses, where this participation is expected to influence job satisfaction.

Table 2. Level of job satisfaction according to level of participation in QMS

Level of Participation in QMS	Mean Job Satisfaction
Low	3.2
Medium	3.8
High	4.5

Source: Authors' own elaboration

Table 2 shows the mean job satisfaction for each level of participation in QMS. It is evident that employees with high participation in quality management systems have a significantly higher level of job satisfaction (mean of 4.5 on a scale of 1 to 5) compared with those with low participation (mean of 3.2). Employees with a medium level of participation in QMS also report a moderate mean satisfaction of 3.8. These results indicate that, indeed, involvement in QMS is associated with greater job satisfaction. This finding can be explained by the fact that employees who actively participate in these systems perceive implicit recognition in their roles and greater autonomy in their work, factors that, according to Herzberg's theory of motivation, are essential for increasing satisfaction in the work environment.

Table 3. Pearson correlation analysis between participation in QMS and job satisfaction

Variable	Participation in QMS	Job Satisfaction
Participation in QMS	1	0.65
Job Satisfaction	0.65	1
Significance (p-value)	p < 0.01	

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Source: Authors' own elaboration

The results of Table 3 show the Pearson correlation analysis, which measures the relationship between the level of participation in QMS and employee job satisfaction. With a correlation coefficient (r) of 0.65 and a significance level of $p < 0.01$, a positive and significant relationship between both variables is confirmed. This result suggests that, as employee participation in QMS increases, so does their job satisfaction. A coefficient of 0.65 indicates a moderate to strong correlation, which supports the idea that involving employees in quality processes is an effective strategy for improving their well-being in the workplace. This positive correlation is consistent with previous studies that associate participation in quality processes with an increase in the perception of the importance of the employee's role, which is associated with a greater sense of achievement and belonging.

Table 4. Comparison of means in job satisfaction by level of participation in QMS (t-test)

Participation Group in QMS	Mean Job Satisfaction	Standard Deviation	N	t-test (p-value)
Low	3.2	0.6	40	
Medium	3.8	0.5	80	
High	4.5	0.4	80	p < 0.05

Source: Authors' own elaboration

Table 4, regarding the t-test for comparison of means, confirms that there are statistically significant differences in job satisfaction among employees with different levels of participation in QMS ($p < 0.05$). Specifically, employees with high participation report an average job satisfaction of 4.5, compared with 3.2 for those with low participation and 3.8 for those with medium participation. This result demonstrates that greater participation in QMS is related to a much more positive perception of the work environment, which suggests that the integration of employees into these systems generates a positive impact on their daily work experience. Moreover, the fact that these differences are statistically significant reinforces the validity of the relationship found and highlights the importance of fostering employee contribution in QMS as a strategy to increase job satisfaction.

The importance of participation in QMS is a determining factor in job satisfaction. Companies seeking to increase the commitment and satisfaction of their employees may consider active inclusion in these quality systems as an effective means of achieving these objectives. The positive and significant relationship between participation and satisfaction supports the need to promote an organizational culture in which employees are integrated into quality processes, not only to improve organizational performance, but also to strengthen the cohesion and well-being of their work team.

DISCUSSION

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The present research highlights a positive and significant relationship between employee participation in quality management systems (QMS) and their job satisfaction in companies certified under the ISO 9001 standard. This finding supports Herzberg's theory of work motivation, which establishes that factors such as recognition and a sense of achievement contribute significantly to job satisfaction (13). In this regard, the results of this study, which reflect a moderate to strong correlation ($r = 0.65$, $p < 0.01$) between participation in QMS and job satisfaction, are consistent with previous studies and suggest that active involvement in these systems not only impacts productivity, but also employee well-being (14).

In comparison with similar studies, the results obtained here are consistent with the research of (1), who found that in companies with high participation in quality systems, employees showed a 30% increase in their perception of job satisfaction, especially in aspects such as the work environment and recognition (15). Likewise, the sense of belonging and commitment to quality objectives are key to increasing employee satisfaction, an aspect that was also reflected in the results of this study, where employees with high participation reported an average satisfaction of 4.5 (on a scale of 1 to 5), significantly higher than that of those with low participation (mean of 3.2) (16).

The positive correlation between participation in QMS and job satisfaction observed in this study aligns with Herzberg's theory of hygiene and motivational factors. According to this theory, participation in QMS can be viewed as a motivational factor, as it grants employees a sense of responsibility and recognition in their roles, promoting an environment in which employees feel valued and aligned with organizational objectives (17). It was also found that job satisfaction is directly related to the perception of contribution to organizational success, an aspect that the employees in this study also highlighted as important (18).

The results of this study not only suggest a direct benefit in job satisfaction, but also indicate that participation in QMS contributes to improving other aspects of the work environment, such as interdepartmental communication and the relationship with supervisors. These findings are similar to those of (19), who observed that organizations with high participation in QMS tend to present a more positive work climate and greater cohesion among teams, which reinforces employee commitment and satisfaction. The importance of these elements in the work environment was corroborated in this study, where employees reported significant improvements in the work atmosphere and in communication as a result of their involvement in QMS.

The research also evidences the need for adequate implementation of QMS in order to maximize its impact on job satisfaction. Contribution to QMS must be structured and accompanied by adequate training so that employees understand their role in the system and feel valued for their contributions. In this study, the mean job satisfaction of employees who actively participated in QMS and received training was higher compared with those who did not receive sufficient guidance or training (20).

Regarding the impact of QMS on the perception of achievement and belonging, it was found that employees actively involved in quality processes perceive a greater contribution to the success of the company. This finding coincides with the research of (21), who concluded that recognition and the perception of positive impact on the

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organization are key factors for maintaining a high level of job satisfaction in companies with quality systems. Likewise, this study highlights the importance of promoting an organizational culture in which employees feel aligned with the company's quality objectives and have the opportunity to contribute actively to their achievement.

The results of this study highlight the relevance of fostering an organizational culture in which participation in QMS is not only an obligation, but an opportunity for the personal and professional growth of employees. Organizational commitment and job satisfaction improve significantly in companies that promote collaboration in quality systems (22). This was corroborated in this study, where job satisfaction was considerably higher among those employees who perceive their participation in QMS as a means for personal development and recognition.

The findings of this research not only reinforce the importance of QMS as a tool for improving organizational quality, but also as an effective means of increasing job satisfaction. The results confirm that active involvement in quality processes increases the sense of belonging, recognition, and commitment of employees (23). Training and inclusion in QMS are key strategies for improving job satisfaction in the business environment. This study provides empirical evidence that reinforces the value of QMS and its careful implementation as a strategy to improve both organizational performance and employee well-being.

CONCLUSIONS

This study evidences a positive and significant relationship between employee participation in quality management systems (QMS) and their job satisfaction. The moderate to strong correlation ($r = 0.65$, $p < 0.01$) demonstrates that involvement in quality processes is associated with a greater sense of recognition, belonging, and achievement. This suggests that, by integrating employees into QMS, companies can strengthen commitment and job satisfaction, key factors for improving both individual and organizational performance.

The results indicate that the level of job satisfaction increases with contribution to QMS. Employees with a high degree of involvement reported significantly higher job satisfaction (mean of 4.5 on a scale of 5) compared with those with low participation (mean of 3.2). This confirms that recognition and autonomy in QMS are important factors that contribute to work well-being, which is in line with Herzberg's motivational theory, highlighting the importance of motivators in satisfaction.

Collaboration in QMS improves other aspects of the work environment, such as interdepartmental communication and the relationship with supervisors. This positive interaction contributes to creating a more satisfactory work environment that promotes employee commitment and their alignment with quality objectives. Overall, the results of this study suggest that the implementation of effective and participatory QMS not only benefits the organization in terms of quality, but is also a key strategy for promoting cohesion, well-being, and the professional development of employees.

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CONSECUENCIAS DE LA FALTA DE COMUNICACIÓN EN LA ROTACIÓN DE PERSONAL

CONSEQUENCES OF LACK OF COMMUNICATION ON EMPLOYEE TURNOVER

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RESUMEN

La presente investigación explora los efectos de la falta de comunicación en la rotación de personal en INDUIMEV CIA. LTDA., empresa de manufactura en Ecuador, identificando cómo esta deficiencia afecta las áreas de ventas y producción y, en última instancia, compromete la productividad y cumplimiento con los clientes. La rotación de personal ha sido reconocida como un problema que genera inestabilidad, retrasa procesos productivos y provoca una pérdida de confianza por parte de los clientes debido a la ineficiencia generada por los cambios constantes en el equipo de trabajo. El objetivo principal de este estudio es analizar el impacto de la comunicación deficiente en la rotación de personal, así como proponer estrategias que fortalezcan los procesos internos y faciliten la retención del talento humano. Para ello, se empleó un enfoque cualitativo mediante la observación y entrevistas con jefes de áreas clave, lo que permitió una comprensión detallada de la problemática y sus efectos en los empleados. Los resultados revelaron que la falta de comunicación en INDUIMEV afecta significativamente la productividad, generando sobrecarga laboral y desmotivación, especialmente cuando no existen manuales de funciones claros ni programas de motivación o incentivos. Muchos empleados desconocen sus roles específicos y perciben un ambiente laboral que no fomenta el crecimiento profesional, lo que incrementa las tasas de rotación. En conclusión, la implementación de programas de comunicación estructurados, un manual de funciones detallado y políticas de motivación son esenciales para mejorar la retención y cohesión del personal. Este estudio no solo ofrece soluciones aplicables a INDUIMEV, sino que también resulta relevante para otras organizaciones que enfrentan problemas similares, subrayando la importancia de una comunicación efectiva para mejorar el clima organizacional y el rendimiento operativo.

Palabras clave: Comunicación, rotación, personal, efectos, procesos, empresa.

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ABSTRACT

This research explores the effects of poor communication on staff turnover at INDUIMEV CIA. LTDA., a manufacturing company in Ecuador, identifying how this deficiency affects sales and production areas and ultimately compromises productivity and customer compliance. Staff turnover has been recognized as a problem that generates instability, delays production processes, and causes a loss of trust on the part of customers due to the inefficiency generated by constant changes in the work team. The main objective of this study is to analyze the impact of poor communication on staff turnover, as well as to propose strategies that strengthen internal processes and facilitate the retention of human talent. To do so, a qualitative approach was used through observation and interviews with heads of key areas, which allowed a detailed understanding of the problem and its effects on employees. The results revealed that lack of communication at INDUIMEV significantly affects productivity, generating work overload and demotivation, especially when there are no clear job manuals or motivation or incentive programs. Many employees are unaware of their specific roles and perceive a work environment that does not encourage professional growth, which increases turnover rates. In conclusion, the implementation of structured communication programs, a detailed job manual, and motivation policies are essential to improve staff retention and cohesion. This study not only offers solutions applicable to INDUIMEV but is also relevant to other organizations facing similar problems, underlining the importance of effective communication to improve organizational climate and operational performance.

Keywords: Communication, rotation, staff, effects, processes, company.

INTRODUCTION

Staff turnover is one of the greatest challenges in human resource management in companies, especially when dealing with organizations dedicated to manufacturing, as is the case of INDUIMEV CIA. LTDA. The lack of communication between hierarchical levels and employees has been identified as a determining factor in the high turnover rate, negatively impacting both productivity and organizational culture (1). In a competitive environment, maintaining a stable team is crucial to guarantee quality in production processes and reduce the costs associated with constant training and recruitment.

In the workplace, organizational communication represents a fundamental pillar for the proper development of any company, as it allows employees to understand and align themselves with the company's objectives, promoting a culture of cooperation and trust (2). However, when this communication is deficient, an environment of uncertainty and distrust is generated, which directly affects employee satisfaction and motivation (3). In this context, the lack of clear and effective communication at INDUIMEV CIA. LTDA. has led to problems that impact the morale and commitment of workers, raising turnover rates, with costs that are not only economic but also affect the organizational climate (4).

The research focuses on a recurring problem in manufacturing companies in Ecuador, where internal communication is frequently relegated in favor of other operational

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priorities. At INDUIMEV CIA. LTDA., it has been observed that communication policies lack a solid structure that allows continuous and transparent interaction between employees and management levels. This deficit generates a disconnection that translates into demotivation and, eventually, into employees' decision to leave the organization (5). The present research addresses this problem from a quantitative and qualitative analysis perspective, evaluating how communication or the lack thereof directly influences staff turnover in the company, generating implications both for performance and for operational costs.

Staff turnover not only implies a financial impact; it also affects organizational culture and the professional development of employees. Every time a worker resigns, the knowledge and experience acquired are lost, which affects the continuity and efficiency of production processes (6). In addition, the replacement process requires significant time and resources, from selection and hiring to training and adaptation of the new staff. At INDUIMEV CIA. LTDA., the lack of communication contributes significantly to this problem, as employees do not feel heard or understood in their work needs and expectations (7).

Previous studies have demonstrated that effective communication in the workplace is directly related to employee satisfaction and retention. Companies with clear and effective communication channels experience lower staff turnover rates, which is due to employees feeling greater commitment and loyalty toward the organization (8). In contrast, the lack of communication can cause dissatisfaction and a sense of disconnection, which often results in decisions to leave the company in search of better working conditions (9). In the context of INDUIMEV CIA. LTDA., internal studies have been conducted that reflect that a large proportion of employees consider that the existing communication channels are neither sufficient nor effective, which negatively influences their perception of the work environment and their motivation (10).

At the international level, the relationship between organizational communication and staff turnover has been widely documented. For example, research in manufacturing companies in Asia and Latin America reveals that ineffective communication is one of the main causes of turnover (11). In these contexts, the lack of communication not only affects lower-level employees, but also middle and senior managers, who do not have a clear and structured flow of information to adequately manage their teams. The situation at INDUIMEV CIA. LTDA. reflects these global problems, adapted to the Ecuadorian context, where employees report a lack of feedback, unawareness of strategic decisions, and scarce opportunities to express their concerns.

The general objective of this study is to analyze the impact of the lack of communication on staff turnover at INDUIMEV CIA. LTDA., identifying its effects on productivity and organizational performance. The specific objectives include evaluating staff knowledge of the job manual and its relationship with turnover, analyzing the implementation of motivation techniques and promotion opportunities as factors of permanence, and proposing an effective communication program that facilitates coordination between areas and improves employee retention.

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MATERIALS AND METHODS

The research focused on verifying the effects produced by the lack of communication in the company. For this purpose, descriptive research was used, as this type of study is employed when one wishes to describe, in detail, a specific reality. Through this approach, using the analysis method, it was possible to characterize the object of study and indicate its characteristics and properties.

Likewise, field research was used, which relies on information from interviews, questionnaires, surveys, and observations. Given that it is possible to combine this research with a documentary approach, it was recommended to first consult the documentary sources in order to avoid duplicating efforts. In addition, the theoretical framework necessary to understand the context of the research was reviewed.

The quantitative method was used to conduct interviews and surveys with employees, which made it possible to collect information and tabulate the results, facilitating the proposal of appropriate solutions. During the process, previous studies on staff turnover were taken as a reference. The technique employed was observation and interviews with company personnel, which contributed to understanding the lack of communication between departments. The population under study was the company Industrias Metálicas Vilema IMEV INDUIMEV CIA. LTDA., and the sample consisted of the heads of the production areas and the administrative department, who were interviewed. In total, 11 people were interviewed.

Table 1. Area heads affiliated with the IESS

AREAS	N° INTERVIEWED
Locksmithing	2
Aluminum	2
Lathe	2
Roll-up systems	2
Administration	3
TOTAL	11

Source: Authors' own elaboration

Note: "People who participated in the interviews from each area"

To carry out the interviews, the heads of the production areas, one assistant, and three people from the administrative area were selected, from a total of 35 employees who make up the company. All of them have contracts duly registered with the Ministry of Labor and are affiliated with the Ecuadorian Social Security Institute.

The interviews were conducted in person at the workplace of each selected employee. During these interviews, the employees described the current situation of the company and how they have experienced the constant entry and exit of personnel, which impacts the production process in some way. The questions posed addressed topics such as the importance of staff stability, the lack of communication as a factor

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contributing to staff turnover, the loss of clients, staff motivation, knowledge of the company's job manual, the representation of labor costs, and the induction of new personnel. The data obtained will be presented in the results tables.

RESULTS

After carrying out the respective research process and having employed the research methodology, which is the method used to solve a research problem through the collection of data using various techniques, providing an interpretation of the data collected and drawing conclusions about the research data.

In addition to employing the appropriate techniques, in this case the surveys conducted with employees, some results were obtained that are detailed below:

Table 2. Staff turnover

QUESTION	YES	NO
Do you believe that staff turnover affects the company's productivity?	8	3

Source: Authors' own elaboration

In Table 2, it was found that of the personnel interviewed, 8 people out of a total of 11 taken as a sample stated that staff turnover does affect the company's productivity. In addition, they noted that every time a person leaves, the workload is affected in all areas, or material, time, and other resources may be lost when having to modify or redo the finished product in the production area, since on several occasions clients do not trust the company because the constant change of personnel makes them feel distrust.

Meanwhile, in the administrative area, the personnel indicated that the change of personnel considerably affects work because it is not possible to work as a team or assign tasks to the new colleague, as it is unknown whether they will stay or not. In the accounting area, it has a major impact because turnover occurs especially in sales and production supervisors, and it is not possible to complete the accounting process since all positions generate valuable information for determining the economic and financial situation.

Table 3. Job manual

QUESTION	YES	NO
Do you know the job manual or has it been explained to you what your tasks are in the position you hold?	4	7

Source: Authors' own elaboration

In Table 3, they indicate that 7 people do not know the job manual because when they started working, no one taught them what their daily tasks are, and on many occasions they even rotate through all areas to help their colleagues in the production area, causing errors in the finished product. When such errors occur, the costs of materials,

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time, and even client balances are borne by the employees who did not leave their work properly or who produced poorly.

They consider that it would be good not to rotate personnel because not everyone has knowledge in all areas, which delays productive operations and even leads to the loss of clients, all framed within the lack of knowledge of functions. In the administrative area, they consider that in the same way there is a total lack of information, as it delays the collection of accounts, delivery of works, installations, duplication of functions, a poor work environment, workload, and it is not possible to perform any of the tasks assigned or proper to the position for which they were hired.

Table 4. Communication channels

QUESTION	YES	NO
Do you consider that the lack of communication between areas has caused staff turnover?	6	5

Source: Authors' own elaboration

In Table 4, of the total of interviewees, 6 people stated that they do consider the lack of communication to be a determining factor for staff turnover, while 5 said no, as they mention that the lack of communication comes from management, who do not induct personnel into the job position or the functions they will perform, and when they cannot cope with all the tasks they choose to resign. They also indicate that even personnel who have worked in the company for a long time know whom to turn to in case of a requirement and go to the person in whom they perhaps have more trust.

In the administrative area, it is stated that the lack of communication has caused several inconveniences with clients and even among work colleagues, as they must keep track of functions that do not correspond to them, wasting time and perhaps doing something that is beyond their reach while neglecting their own job position.

Table 5. Motivation

QUESTION	YES	NO
Have motivation techniques or promotion options been used for staff?	4	7

Source: Authors' own elaboration

In Table 5, it can be observed that 7 interviewed persons mentioned that staff has not been motivated in any way. According to their criteria, they work more than the working hours established by law and do not receive any compensation; values related to food are deducted from their corresponding payroll when they go out on installations, and many times they prefer not to eat so that deductions are not made; no additional amount is paid for early-morning departures or arrivals at the same hour. Attempts have been made to discuss this situation with management but they have not received a favorable response, and they have no option for promotion; some employees even receive a salary lower than that established by law.

After establishing the results with the employees' opinions, it can be stated that the majority agree that the lack of communication is indeed a determinant of staff turnover in each area and that solutions must be implemented to eradicate this problem. Lack of knowledge has also become an important factor, as it is considered that each employee should know their rights and obligations in the position they will hold, as well as receive adequate induction.

Table 6. Communication program

QUESTION	YES	NO
Have communication programs been implemented to ensure efficient communication in the company?	3	8

Source: Authors' own elaboration

In Table 6, it can be noted that the company has not implemented communication programs that help improve the process between areas; for this reason, it is recommended that they be designed in order to improve it. Currently, our company faces challenges in communication between areas, which is affecting the efficiency and effectiveness of our internal processes. The lack of structured and effective programs to facilitate communication between different departments has given rise to misunderstandings, delays, and deficient coordination of work. To address this situation, it is essential to implement communication programs specifically designed to improve interaction and collaboration among the different areas of the company.

Table 8. Control

QUESTION	YES	NO
Is there control of staff training and turnover within the company in the different areas?	4	7

Source: Authors' own elaboration

We can observe in Table 8 that there is a significant deficiency in the control and management of the training sessions carried out, which has resulted in insufficient implementation of formative programs for staff. Often, very few training sessions have been held, and in many cases operators have been obliged to carry out their daily activities based mainly on empirical knowledge. This lack of structured training not only limits the professional growth of employees, but can also negatively affect the quality of work and operational efficiency. To improve this situation, it is essential to establish a comprehensive system of control and follow-up of training, ensuring that it is carried out regularly and effectively.

Keeping control of employee training is very important, as it not only serves to improve internal processes but also to be able to report to the relevant control entity.

DISCUSSION

Since the times prior to the First World War, the study of scientific management emphasized the importance of systematic organization and communication to improve

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efficiency and job satisfaction (12). Classical theories established communication as a fundamental component for cohesion and motivation at work. Over the years, studies on organizational communication have demonstrated that effective internal communication is key to maintaining motivation and reducing staff turnover, as observed at INDUIMEV CIA. LTDA. (13).

This study reveals that a significant proportion of employees perceive that deficient communication within the company negatively affects job stability and productivity. This finding is consistent with studies that maintain that organizational communication consists of techniques aimed at facilitating the flow of information among the members of an organization and its external environment, promoting internal cohesion (14). In the case of INDUIMEV, the lack of a clear internal communication system generates demotivation among employees and fosters high turnover, a phenomenon also documented in previous research (15).

Internal communication can be analyzed as a systemic structure that, if managed adequately, contributes to reducing staff turnover (16). At INDUIMEV, the lack of effective communication between hierarchical levels and employees has led to problems in task coordination and in the assignment of responsibilities, increasing the workload and decreasing job satisfaction. This phenomenon is similar to that found in other organizations, where the lack of clarity in internal communication causes high levels of work stress and disorganization, factors that contribute significantly to staff turnover (17).

In addition, the results indicate that the lack of knowledge of specific functions and the absence of induction negatively affect employee performance and satisfaction, in accordance with research arguing that the lack of a job manual and clear induction increase operational errors and reduce efficiency (18). At INDUIMEV, the absence of a comprehensible job manual forces employees to assume unspecified tasks, increasing the probability of errors and generating frustration. This finding aligns with studies showing that clarity in roles and functions decreases staff turnover and improves job satisfaction (19).

On the other hand, the research reveals that the lack of motivation programs and promotion opportunities at INDUIMEV is another factor that influences high turnover. According to theories of work motivation, the lack of incentives causes employees to seek better opportunities in other companies (20). At INDUIMEV, the absence of these programs has generated demotivation and a lower willingness of employees to remain in the company. This phenomenon is supported by research indicating that the lack of opportunities for professional growth is one of the key factors in staff turnover (21).

Training and knowledge management are also essential for talent retention. At INDUIMEV, employees indicated that training is insufficient and that, in many cases, they must perform tasks based on empirical knowledge, which affects their performance and their perception of the company. This problem is similar to that identified in studies highlighting that the lack of structured training limits professional growth and reduces operational efficiency (22). In organizations with high turnover rates, such as INDUIMEV, an effective training system is fundamental for maintaining organizational knowledge and reducing the stress associated with lack of skills.

This study corroborates that the lack of effective communication not only affects staff retention, but also impacts process efficiency and employee satisfaction. In comparison with other research, the findings of this study reinforce the need to establish internal communication systems that foster cohesion and improve the organizational climate (23). Implementing clear communication policies, offering motivation programs, and establishing a continuous training system would help INDUIMEV reduce staff turnover, improve operational performance, and strengthen employee commitment (24).

CONCLUSIONS

The lack of communication at INDUIMEV CIA. LTDA. significantly impacts the company's productivity and stability, as employees perceive that high turnover negatively affects internal processes. Each change of personnel increases the workload, generating losses of time, materials, and resources. These findings coincide with previous studies that indicate that clear and effective communication reduces staff turnover, strengthening confidence in the company's products and services. Therefore, the implementation of a structured communication program is essential.

The majority of employees are unaware of the job manual and have not received adequate induction regarding their specific functions. This lack of knowledge generates operational errors, duplication of functions, and a deficient work environment. Establishing a detailed job manual and a formal induction process would allow employees to clearly understand their responsibilities, reducing errors and improving efficiency in both production and administrative areas.

Motivation and promotion opportunities are practically nonexistent at the company. Employees report working beyond the hours established by law without additional compensation, salary deductions for food during installations, and salaries sometimes below the legal minimum. The absence of incentive and career development policies contributes directly to demotivation and the decision to leave the organization. Implementing motivation policies and clear promotion paths is indispensable for talent retention.

Finally, there is no effective control of training or of staff turnover. The scarcity of structured training sessions forces operators to rely on empirical knowledge, limiting professional growth and operational quality. Establishing a comprehensive system of control and continuous training, together with structured communication programs and a detailed job manual, constitutes a key strategy for reducing turnover, improving organizational climate, and strengthening the operational performance of INDUIMEV CIA. LTDA. and of similar organizations facing analogous challenges.

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INTELIGENCIA ARTIFICIAL Y TRANSFORMACIÓN DIGITAL EN AUDITORÍA PARA COMBATIR FRAUDE Y CORRUPCIÓN

ARTIFICIAL INTELLIGENCE AND DIGITAL TRANSFORMATION IN AUDITING TO COMBAT FRAUD AND CORRUPTION

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RESUMEN

La incorporación de la inteligencia artificial (IA) en la auditoría ha cobrado relevancia en el contexto de la lucha contra el fraude y la corrupción. Estos fenómenos amenazan la integridad financiera de las organizaciones y socavan la confianza pública. Las tácticas delictivas han adquirido niveles de sofisticación que superan la capacidad de la auditoría tradicional, lo que resalta la necesidad de adoptar innovaciones tecnológicas. El problema de investigación se da por los desafíos del fraude y la corrupción en el entorno digital presentan nuevos retos que requieren una respuesta eficaz por parte de los auditores. El objetivo, es analizar el impacto de la integración de la inteligencia artificial en los procesos de auditoría, con un enfoque específico en la prevención del fraude y la corrupción. La investigación sigue un diseño metodológico mixto, combinando análisis cuantitativo y cualitativo. Se realizó una revisión sistemática de literatura y entrevistas semi-estructuradas con expertos. Los resultados exponen que la IA ha demostrado ser una herramienta eficaz para el análisis de datos a gran escala, con una capacidad de procesamiento 500% más rápida que los métodos tradicionales. Además, las herramientas basadas en IA reducen el tiempo de auditoría en un 35% y mejoran la precisión en la detección de fraudes en un 14%, alcanzando una tasa de acierto del 92%. La cobertura de auditoría también se ve incrementada, llegando al 100% de los datos, en comparación con el 5-10% de los métodos convencionales. Asimismo, las soluciones de IA son más costo-efectivas, con una reducción de costos del 28%. En conclusión, la integración efectiva de la IA en los procesos de auditoría requiere abordar desafíos a nivel tecnológico, organizacional y ético-regulatorio. La adopción de estas tecnologías puede transformar la práctica de la auditoría y asegurar la integridad financiera de las organizaciones en un entorno digital cambiante.

Palabras clave: Inteligencia artificial, auditoría, fraude, corrupción, transformación digital

ABSTRACT

The incorporation of artificial intelligence (AI) in auditing has become relevant in the context of the fight against fraud and corruption. These phenomena threaten the financial integrity of organizations and undermine public trust. Criminal tactics have acquired levels of sophistication that exceed the capacity of traditional auditing, highlighting the need to adopt technological innovations. The research problem is given by the challenges of fraud and corruption in the digital environment present new challenges that require an effective response from auditors. The objective is to analyze the impact of the integration of artificial intelligence in auditing processes, with a specific focus on the prevention of fraud and corruption. The research follows a mixed methodological design, combining quantitative and qualitative analysis. A systematic literature review and semi-structured interviews with experts were conducted. The results show that AI has proven to be an effective tool for large-scale data analysis, with a processing capacity 500% faster than traditional methods. In addition, AI-based tools reduce audit time by 35% and improve fraud detection accuracy by 14%, achieving a 92% hit rate. Audit coverage is also increased, reaching 100% of the data, compared to 5-10% for conventional methods. AI solutions are also more cost-effective, with a cost reduction of 28%. In conclusion, effective integration of AI into audit processes requires addressing challenges at the technological, organizational and ethical-regulatory levels. The adoption of these technologies can transform the practice of auditing and ensure the financial integrity of organizations in a changing digital environment.

Keywords: Artificial intelligence, auditing, fraud, corruption, digital transformation.

INTRODUCTION

The incorporation of artificial intelligence (AI) in the field of auditing has gained growing relevance, especially in the context of the fight against fraud and corruption, phenomena that threaten the financial integrity of organizations and undermine public trust in institutions. The nature of the problem is manifested in the alarming increase in fraudulent and corrupt activities in a digital environment that is constantly evolving, as organizations face complex challenges that require innovative and effective responses, given that criminal tactics have acquired levels of sophistication that exceed the capacity of traditional auditing, which is based on manual methods and static processes and proves insufficient in the face of the reality of cyber fraud, data manipulation, and digital corruption, which encompass practices such as money laundering through cryptocurrencies (1). This context highlights the imperative need to adopt technological innovations that enable auditors to detect and prevent fraud in real time, thereby ensuring transparency and trust in institutions.

The background that underpins the present research is found in a growing body of academic and professional studies that have documented how AI and digital transformation are revolutionizing the auditing profession, as evidenced in various investigations showing that machine learning algorithms have the capacity to process large volumes of data and detect complex patterns that may go unnoticed by human auditors. For example, studies conducted by authors such as (2) and (3) have demonstrated that these algorithms can significantly improve the accuracy of financial fraud detection.

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In addition, research carried out by (4) and (5) has explored the impact of AI on the redefinition of the competencies required of auditors, emphasizing the need for advanced technological skills in order to effectively use data analysis tools and AI algorithms. Likewise, (6) and (7) have contributed to the debate by analyzing the use of natural language processing in auditing, a technology that enables machines to interpret and analyze documents and contracts in search of fraud indicators. However, despite significant advances, the literature also highlights important challenges, such as those discussed by (8) and (9), who have addressed the ethical concerns that arise with the use of AI in auditing, including aspects related to data privacy, algorithmic bias, and the need to maintain transparency in automated decision-making.

Artificial intelligence, in its essence, refers to computational systems that can perform tasks that normally require human intelligence, such as learning, problem-solving, and decision-making. This technology encompasses a variety of techniques and tools, including machine learning, natural language processing, and advanced data analysis (10). Machine learning enables algorithms to identify anomalous patterns in large sets of financial data, which is crucial for the timely detection of fraud. On the other hand, natural language processing becomes an essential tool, as it allows computers to understand and analyze human language, facilitating the review of documents and communications in search of irregularities and suspicious behaviors (11).

Digital transformation in auditing involves the integration of advanced technologies that not only automate processes but also promote continuous and real-time auditing. This approach represents a significant shift from traditional audits, which were conducted periodically. The automation of repetitive and low-value-added tasks allows auditors to focus on more strategic and in-depth analysis activities, while real-time data analysis provides a more accurate and up-to-date view of an organization's financial activities. Data visualization, for its part, becomes a key tool for interpreting and communicating findings effectively, facilitating informed and evidence-based decision-making.

Considering this, fraud and corruption in the digital environment present new challenges that require urgent attention, because cyber fraud, which includes practices such as phishing and the use of ransomware, has evolved and become increasingly sophisticated; at the same time, digital corruption, which can manifest itself through electronic bribes and the manipulation of digital records, has grown in complexity and scope (12). Likewise, digital money laundering, facilitated by cryptocurrencies and online transactions, has further complicated the auditing landscape. This reality highlights the need for a proactive and adaptive approach by auditors, who must equip themselves with tools and knowledge that enable them to address these emerging threats effectively (13).

The effective integration of AI into auditing processes to combat fraud and corruption can be conceptualized within a framework that addresses three fundamental levels: the technological level, the organizational level, and the ethical and regulatory level. At the technological level, it is essential to have a robust data infrastructure, appropriate AI algorithms, and visualization tools that facilitate data analysis (13).

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The organizational level focuses on the culture of innovation and technological adoption within organizations. This includes the development of specific AI skills and competencies for auditors, as well as the restructuring of auditing processes that allow the integration of these technologies in a fluid and effective manner (13).

Finally, the ethical and regulatory level addresses the ethical considerations related to the use of AI in auditing. As progress is made in the implementation of these technologies, it is essential to ensure regulatory compliance and data protection (13).

Therefore, the main objective of this study is to analyze the impact of the integration of artificial intelligence into auditing processes, with a specific focus on the prevention of fraud and corruption. To fulfill this objective, several specific objectives have been established to guide the research: examine the current applications of AI in auditing processes; evaluate the effectiveness of AI-based tools for fraud detection and prevention, in comparison with traditional methods; identify the challenges and limitations in the implementation of AI solutions in auditing; analyze the ethical and legal implications of the use of AI in these processes; and propose a framework for the effective integration of AI into auditing practices. This comprehensive approach not only seeks to contribute to the existing body of knowledge, but also to offer a critical analysis of how AI can be used effectively to combat fraud and corruption, thereby transforming the practice of auditing and ensuring the financial integrity of organizations in a constantly changing digital environment.

MATERIALS AND METHODS

Research Method:

The research follows a mixed methodological design that allows combining the rigor of quantitative analysis with the depth of qualitative analysis. This combination provides a robust framework for exploring the topic in question, facilitating data triangulation and the validation of findings.

Quantitative Phase:

Population: Constituted by scientific articles, technical reports, and case studies that have been published between 2018 and 2024. These documents specifically address the topic of artificial intelligence in the field of auditing and its relationship with fraud prevention.

Sample: For the quantitative phase, a total of 200 publications were selected. This selection was carried out through systematic sampling, using inclusion criteria based on the relevance of the content, the impact on the academic community, and the currency of the studies.

Qualitative Phase:

Population: In the qualitative phase, the population of interest includes auditing professionals, artificial intelligence experts, and academics specializing in financial technology.

Sample: In-depth interviews were conducted with 30 experts, who were selected through intentional sampling. This process sought to ensure a diverse representation of perspectives and experiences, thereby enriching the quality of the data obtained.

Instruments

1. Systematic Literature Review:

• An exhaustive search was conducted in academic databases such as Scopus, Web of Science, and IEEE Xplore, using predefined keywords related to the study topic.

• A data extraction matrix was used to systematically catalog and analyze the relevant information from each selected publication.

2. Semi-Structured Interviews:

• An interview guide was designed based on the previous findings of the literature review.

Data Analysis:

1. Quantitative Analysis:

• A bibliometric analysis of the reviewed literature was carried out to identify trends and patterns in the publication of studies on AI in auditing.

2. Qualitative Analysis:

• Open, axial, and selective coding techniques were applied to identify emerging themes and significant patterns in the experts' responses.

Validation:

• A peer review process was implemented for the preliminary results, allowing critical evaluation of the findings by other experts in the field.

• A validation session was held with a subgroup of the interviewed experts in order to confirm the interpretation and relevance of the findings obtained in the research.

The combination of quantitative and qualitative analysis provides a solid foundation for understanding both the general trends in AI adoption and the challenges and opportunities experienced in professional practice.

RESULTS

Below are tables designed to support and illustrate the results presented in the research regarding the integration of Artificial Intelligence (AI) into auditing processes, specifically in the context of fraud and corruption prevention.

Table 1. Current applications of AI in auditing

Application	% of Firms	Time Reduction (%)	Accuracy Rate (%)	Fraud Detection Improvement (%)
Large-scale data analysis	87%	62%	N/A	N/A
Anomaly detection	N/A	N/A	94%	73%
Process automation	91%	N/A	N/A	45% (operational

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				efficiency)
Predictive analysis	N/A	N/A	N/A	82% (risk prediction)

Source: Authors' own elaboration

In this table, the main current applications of AI in auditing are highlighted. Large-scale data analysis is adopted by 87% of firms and achieves a time reduction of 62%. Anomaly detection reaches a 94% accuracy rate and improves fraud detection by 73%. Process automation is used by 91% of firms and improves operational efficiency by 45%. Predictive analysis improves risk prediction by 82%.

Table 2. Comparison of AI tools vs. traditional methods in fraud detection

Metric	AI-based Tools	Traditional Methods
Processing capacity	500% faster	Baseline
Audit time reduction	35%	—
Fraud detection accuracy improvement	14% (92% hit rate)	Baseline
Audit coverage	100% of data	5–10% of data
Cost reduction	28%	—

Source: Authors' own elaboration

The results show that AI has proven to be an effective tool for large-scale data analysis, with a processing capacity 500% faster than traditional methods. In addition, AI-based tools reduce audit time by 35% and improve fraud detection accuracy by 14%, achieving a 92% hit rate. Audit coverage is also increased, reaching 100% of the data, compared with 5–10% for conventional methods. AI solutions are also more cost-effective, with a cost reduction of 28%. This broad coverage is vital for a comprehensive assessment of risks and opportunities. From an economic perspective, the implementation of AI solutions proves more cost-effective, allowing companies to reinvest in other key areas and generating a virtuous circle of continuous improvement (15).

Table 3. Challenges and limitations in AI implementation

Challenge	% of Firms	Comment
Technical complexity	72%	Difficulties in implementation
Data quality and standardization	68%	Lack of consistent data
Data quality problems	53%	Impact of errors and bias
Model interpretability	79%	"Black box" concerns
Processes to explain decisions	45%	Lack of robust processes
Ethical and privacy considerations	88%	Ethical concerns in AI adoption
Conflicts with regulations	62%	Impact on international cases

Source: Authors' own elaboration

Table 3 provides a clear view of the main challenges that companies face when implementing Artificial Intelligence (AI) solutions, reflecting a complex environment that requires attention to multiple factors. One of the most significant obstacles is

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technical complexity, which affects 72% of organizations, since AI implementation demands specialized knowledge that is often not available internally. This need for technical expertise can limit companies' capacity to adopt advanced technologies, generating dependence on external consultants that can be costly and prolong the implementation process (16).

Another prominent challenge is data quality and standardization, a concern for 68% of companies. The effectiveness of AI models is based on the quality of the data with which they are trained; without consistent and reliable data, it is almost impossible to achieve accurate results. The lack of adequate data can lead to underutilization of AI capabilities, limiting opportunities for improvement and optimization.

In addition, 53% of companies face data quality problems, where the existence of errors, inconsistencies, and biases can compromise model performance. This aspect is crucial, as poorly managed data not only affects model accuracy but can also introduce biases into the results, leading to erroneous and potentially harmful decisions.

Model interpretability is another critical point, affecting 79% of organizations. Many of the algorithms used in AI are considered "black boxes," meaning that it is difficult to understand how they reach their conclusions. This lack of transparency generates distrust in the results, which can be an obstacle to the widespread adoption of these technologies in business decision-making.

The difficulty of establishing clear processes to explain the decisions made by AI models is an additional challenge that affects 45% of companies. This lack of clarity can complicate auditing and accountability, which is essential in regulated environments where automated decisions must be justified.

Ethical and privacy considerations are perhaps the greatest challenge, affecting 88% of firms. Concerns about data privacy, algorithmic bias, and the need for transparency in automated decision-making must be addressed carefully to ensure responsible AI adoption.

DISCUSSION

The findings of this research confirm that the integration of artificial intelligence into auditing processes constitutes a significant advance in the fight against fraud and corruption. The quantitative results demonstrate substantial improvements in processing speed, detection accuracy, audit coverage, and cost-effectiveness compared with traditional methods. These improvements align with previous studies that have highlighted the transformative potential of machine learning and natural language processing in financial analysis (2, 3, 6, 7).

Nevertheless, the high percentages of firms reporting technical complexity (72%), data quality and standardization problems (68%), and model interpretability concerns (79%) indicate that technological readiness remains uneven. The "black-box" nature of many AI models raises legitimate concerns about accountability and the ability of auditors to explain and defend automated decisions, a point also emphasized in the ethical literature (4, 8, 9).

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The organizational dimension is equally critical. Successful AI adoption requires not only technological infrastructure but also a culture of innovation, continuous training of auditors in data analytics and AI tools, and the redesign of audit processes to integrate continuous and real-time monitoring. Without these organizational enablers, the technical benefits of AI risk remaining underutilized.

At the ethical and regulatory level, 88% of firms express concerns about privacy and ethics, and 62% report conflicts with existing regulations. The absence of specific regulatory frameworks for the use of AI in auditing underscores the urgent need for closer collaboration among professionals, academics, and regulators to develop an appropriate normative framework that allows the benefits of these innovative technologies to be harnessed while safeguarding fundamental rights and professional standards (21, 22).

The results of this research not only expand but also deepen the findings of previous studies. While earlier works focused primarily on the potential benefits of AI for fraud detection (23, 24), the present study provides quantitative evidence of these improvements and explicitly highlights the practical challenges that accompany implementation. Likewise, our findings on the importance of model interpretability and the need to balance automation with human judgment add a new dimension to previous discussions on the transformation of the auditing profession (25).

The study presents certain limitations, including geographic bias, the rapid pace of technological evolution, self-reported data, and the inherent complexity of fraud. These limitations should be taken into account when interpreting the results and open the door to opportunities for future research that can address these issues.

Future lines of research include longitudinal studies, the exploration of psychological aspects, the development of hybrid models that combine AI and human expertise, in-depth analysis of ethics and governance, and the impact of AI in auditing in the context of emerging economies. These areas of study will allow a more comprehensive and holistic understanding of the integration of AI into auditing practice, opening new horizons for the profession.

CONCLUSIONS

The integration of artificial intelligence (AI) into auditing processes has demonstrated a significant impact on the prevention of fraud and corruption. AI-based tools substantially outperform traditional methods in key aspects such as data processing speed, fraud detection accuracy, and audit coverage.

The results reveal that AI offers greater operational efficiency, with a 35% reduction in audit time and improved cost-effectiveness, with a 28% cost saving compared with conventional methods. This allows organizations to optimize resources and reinvest in strategic areas.

However, the adoption of AI in auditing faces significant challenges, such as technical complexity, data quality and standardization, and ethical and privacy concerns. To fully harness the potential of AI, it is essential that organizations adopt a holistic approach

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that addresses these aspects at the technological, organizational, and ethical-regulatory levels.

In summary, the effective integration of AI into auditing practices can transform the profession, enhance the detection and prevention of fraud and corruption, and contribute to safeguarding the financial integrity of organizations in an increasingly digital and complex environment. Success will depend on simultaneous attention to technology, organizational culture, professional competencies, and robust ethical and regulatory frameworks.

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