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ORIGINAL

Investment proposal for raw material supply in PILADORA MÍA: a viability approach from the producer's perspective

Propuesta de inversión para el abastecimiento de materia prima en PILADORA MÍA: un enfoque de viabilidad desde la perspectiva del productor

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ABSTRACT

Introduction: PILADORA MIA faces a deficit in raw material (national yellow corn) investment, which hinders its economic development and causes its installed capacity to be underutilized due to supply scarcity. This situation requires intervention through a strategic investment proposal.
Objective: to evaluate the investment viability aimed at increasing the raw material supply for the company "PILADORA MIA" through the analysis of corn producers' perception.
Method: a descriptive study with a quantitative approach and a non-experimental design was utilized. The sample consisted of 100 corn producers who met specific inclusion criteria. The data collection technique was the survey, using a validated questionnaire that utilized the Likert scale to measure participants' reactions.
Results: the results showed substantial support from key suppliers. 74 % of the surveyed producers endorsed the investment to foster economic growth, while 80 % considered it crucial to balance the raw material supply with the mill's processing capacity. Furthermore, the proposal proved financially profitable, obtaining a positive NPV and an IRR of 18 %.
Conclusions: the evaluation of the producers' positive perception confirms that the investment proposal is viable and profitable. Supplier support ensures the necessary source of supply for PILADORA MIA to fully utilize its resources, achieving expansion and satisfying the unsatisfied demand in the Los Ríos province.

Keywords: Economic Growth; Investment; Raw Materials; Supply; Viability; Profitability.

RESUMEN

Introducción: PILADORA MÍA enfrenta un déficit en la inversión de materia prima (maíz amarillo nacional), lo que dificulta su desarrollo económico y provoca que su capacidad instalada esté infrautilizada debido a la escasez de suministro. Esta situación requiere la intervención a través de una propuesta de inversión estratégica.
Objetivo: evaluar la viabilidad de inversión orientada al incremento del abastecimiento de materia prima de la empresa "PILADORA MÍA" mediante el análisis de la percepción de los productores de maíz.
Método: se empleó un estudio descriptivo de enfoque cuantitativo con un diseño no experimental. La muestra consistió en 100 productores de maíz que cumplían criterios de inclusión específicos. La técnica de recolección de datos fue la encuesta mediante un cuestionario validado que utilizó la escala de Likert para medir la reacción de los participantes.
Resultados: los resultados mostraron un apoyo sustancial de los proveedores clave. El 74 % de los productores encuestados avaló la implementación de la inversión para el crecimiento económico, y el 80 % consideró esencial equilibrar la materia prima existente con la capacidad de procesamiento de la piladora. Además, la propuesta demostró ser financieramente rentable, obteniendo un VAN positivo y una TIR del 18 %.

Conclusiones: la evaluación de la percepción favorable de los productores confirma la viabilidad y rentabilidad de la propuesta de inversión. El respaldo del proveedor asegura la fuente de abastecimiento necesaria para que PILADORA MÍA pueda utilizar plenamente sus recursos, logrando la expansión y satisfaciendo la demanda insatisfecha en la provincia de Los Ríos.

Palabras clave: Crecimiento Económico; Inversión; Materia Prima; Abastecimiento; Viabilidad; Rentabilidad.

INTRODUCTION

Globally, investments in raw materials reached $4,35 trillion in 2022, with China and India leading in investment rates.[1] In retrospect, investment in Latin America in 2022 was $436,85 billion, lower than that of India. In Ecuador, total investment in raw materials was $10,17 billion, equivalent to approximately 8,8 % of the Gross Domestic Product (GDP).

From a conceptual perspective, business investment consists of allocating financial resources to the acquisition of assets with the aim of obtaining a higher return in the future.[2] This definition is complemented by the view of Haro and Rosario[3], who emphasize that investments are a fundamental part of a company's economic structure and can be a source of financial crises due to the commitment of resources they represent.

In the specific context of agro-industrial companies, raw materials represent the fundamental starting point for any type of production, being especially critical in processing companies such as PILADORA MÍA, which depend on a continuous supply of domestic yellow corn. According to Chávez[4] plant-based raw materials, such as corn, are the basis for the manufacture of consumer products.

The appropriate financial strategy for this type of investment, according to Gaytán-Cortés[5] covers aspects such as investment, capital structure, financial risks, and profitability, all of which are necessary to achieve competitiveness and harmonious growth. In particular, offensive investments seek the growth of the company, which can be internal when demand has increased and exceeded supply.

According to Ortega[6] market analysis prior to any investment consists of evaluating and determining the dimensions and opportunities of a specific market by collecting data that allows changes to be predicted. This analysis must consider elements such as customer segmentation, purchasing patterns, competition, and the economic environment.

In terms of market behavior, the laws of supply and demand described by Salvatore[7] and Guzmán[8] establish that the quantity demanded is inversely proportional to price, while the quantity supplied is directly proportional to price. The convergence between these curves indicates a point of equilibrium that represents the price at which agreement is reached between producers and consumers.

According to Chumacero[9] the evaluation of investment projects requires systematic and scientific techniques to determine economic and financial profitability. Methods such as Net Present Value (NPV) and Internal Rate of Return (IRR) make it possible to support the success of operations by knowing each cost and determining with certainty the profit generated by the project.

PILADORA MÍA, established in 2004 and located in the canton of Ventanas, is dedicated to processing domestic yellow corn, which is sold to large companies (such as PRONACA S.A., AGRIPAC S.A., and LIRIS S.A.) that develop balanced feed for poultry farming, as well as to wholesale markets in the Ecuadorian highlands.

The company has experienced a deficit in investment projects in raw materials, specifically domestic yellow corn. This situation has hampered the company's economic development, and the shortage of raw materials has meant that the existing machinery is not being fully utilized. In addition, there are seasons when agricultural production declines, creating a deficit in the production process. To meet its customers' expectations and promote its growth, the company needs to improve the use of its resources, as well as increase its storage infrastructure and the acquisition of raw materials. This calls for an investment proposal. The viability and effectiveness of this proposal depend crucially on the willingness and perception of the key players in the supply chain, who are the company's own corn producers. Therefore, it is essential to investigate whether local producers perceive the need for this investment, whether they support the expansion, and whether they are willing to maintain a commercial relationship with PILADORA MÍA, which will be the support to alleviate the supply problem. This is the motivation for conducting this research, which is based on the following scientific question: What is the perception of PILADORA MÍA's corn producers regarding the feasibility of an investment proposal aimed at increasing the company's supply or stockpiling of raw materials?

The importance of this work lies in the fact that its results provide a solid and objective basis for analyzing the situation. This approach confirms the need for the proposed investment by directly gathering producers' perceptions of the need for economic growth, the need for an investment plan, and the importance of balancing existing raw materials with processing capacity. This study not only presents a proposal as part of financial planning, but also validates the acquisition strategy by determining the willingness of producers to market

locally. Therefore, the research is justified by using statistical evidence from the main actors to demonstrate the viability, profitability, and influence of the proposal on the economic growth of the company PILADORA MÍA, seeking to alleviate the problems of raw material supply.

In short, the objective of the research is to evaluate the viability of investment aimed at increasing the supply of raw materials to the company "PILADORA MÍA" by analyzing the perception of corn producers.

METHOD

Type of study

An observational, descriptive, cross-sectional study was conducted. A quantitative approach was adopted, based on numerical measurement and statistical analysis to test theories and establish patterns of behavior. The choice of these approaches was appropriate, as the descriptive study helped to identify the characteristics and needs of PILADORA MÍA, while the quantitative approach provided a solid and objective basis for confirming the need for the proposed investment. The research design was non-experimental, as it was carried out without deliberate manipulation of variables, observing the phenomena in their natural environment for analysis. Additionally, the design was cross-sectional in nature, as the data were collected at a specific time and moment.[10]

Population and Sample

The population of interest for PILADORA MÍA was the corn producers in the Ventanas canton, numbering around 1,000 producers. This population was governed by the established selection criteria. The inclusion criteria allow the participants who will form part of the study population to be defined. These ensure that the sample is appropriate for the research objective. Exclusion criteria, on the other hand, specify the conditions or characteristics for which a participant could be eliminated, even if they meet the inclusion criteria, for practical or ethical reasons. These criteria focus on the quality of participation and on avoiding bias.[11]

Inclusion criteria:

- Be a corn producer in the Ventanas canton.
- Have at least five hectares planted with corn.
- Have been a corn producer in the area for at least three years.

Exclusion criteria:

- Producers who refuse to provide their informed consent.
- Producers whose information or responses are inconsistent or incomplete.
- Producers who, for reasons of force majeure (e.g., health or logistical problems), are unable to complete the survey within the data collection period established for this cross-sectional study.

The sample size was 100 producers. A non-probability convenience sampling method was used, where individuals were selected based on the researchers' decision, without seeking to be statistically representative of the entire population, but rather to be sufficient cases to obtain the necessary considerations.

Data collection instruments

The data collection technique was a survey of 100 corn producers. The instrument used was a questionnaire. The questionnaire, which was personally authored, consisted of 10 questions and was designed to determine the extent to which an investment in raw materials in PILADORA MÍA would be favorable.

The instrument covered two dimensions: 1) financial processes (planning, production, and raw materials) and 2) return on investment (profitability and competitiveness). The Likert scale was used (strongly disagree 1 to strongly agree 5). The validity of the questionnaire content was evaluated and approved by three expert judges.

Data processing and analysis

The surveys were collected using Google Forms due to its accessibility. The responses were then downloaded into a spreadsheet and reviewed to discard those that were not fully completed. Data tabulation was performed in Excel. The table function was used to manage and analyze the data effectively, and the Chart function was used to create statistical graphs (specifically pie charts) showing percentage frequencies. Excel was chosen for its accessibility and ease of data management. Finally, the analysis and interpretation were carried out by observing the graphs and comparing the scales to determine the feasibility of the investment proposal.

Ethical Aspects

The research was conducted in accordance with ethical principles, in accordance with the 2008 Constitution of the Republic of Ecuador, which guarantees freedom of creation and research within the framework of ethical

respect (Article 387). Authorization was also requested from the owner of PILADORA MÍA, communicating objectives, procedures, risks, and benefits. It was ensured that the information obtained would be used exclusively for the project and that confidential financial information about the company would not be disclosed. Participants were informed of the purpose of the survey, ensuring their voluntary participation and maintaining the confidentiality of their personal data.

RESULTS

Financial Processes

The results of the research pertaining to the dimension of financial processes are shown in the graph below.

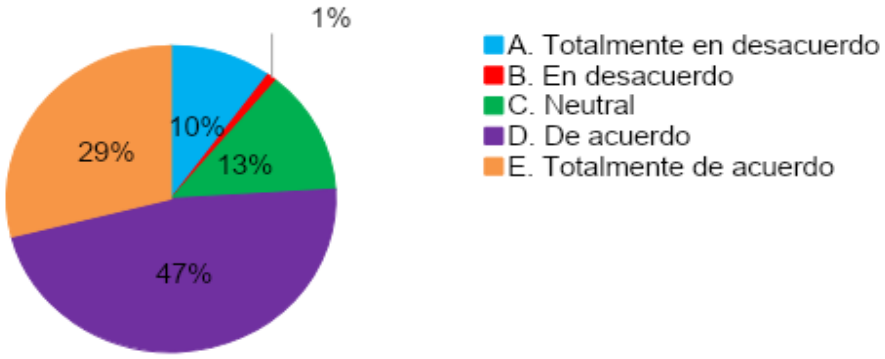

Figure 1. Do you think it would be appropriate for PILADORA MÍA to have a raw material investment plan?

The vast majority of producers (76 %) considered it appropriate for PILADORA MÍA to have an investment plan (47 agreed and 29 strongly agreed).

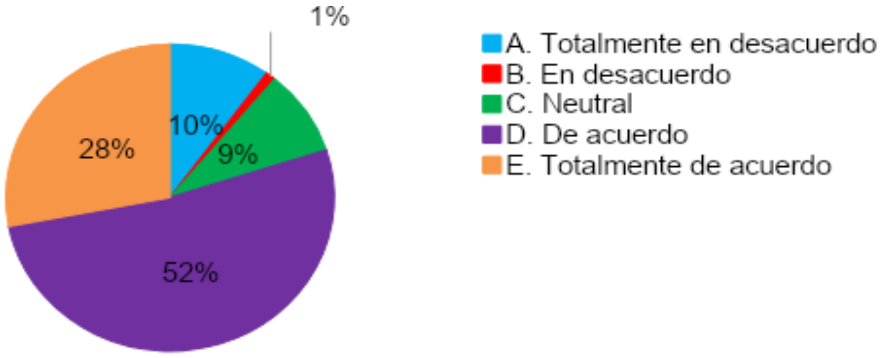

Figure 2. Do you think it would be appropriate to balance the amount of raw material available and the amount of raw material that can be processed (ground/crushed) at PILADORA MÍA?

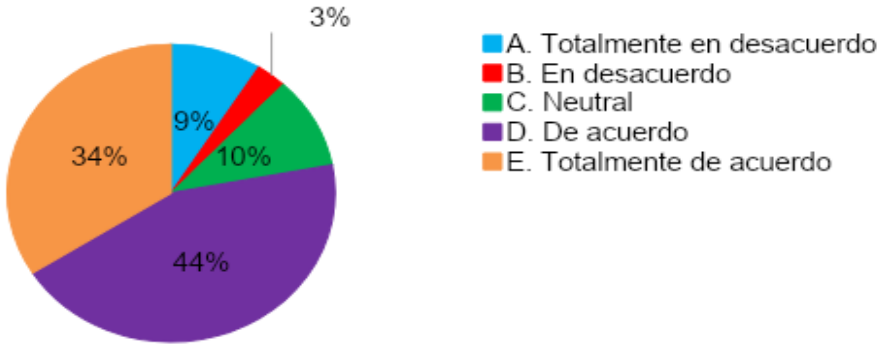

Figure 3. Do you think it would be appropriate for PILADORA MÍA to purchase corn produced in the Ventanas canton?

There was a notable consensus (52 % agreed and 28 % strongly agreed) on the need to balance the amount of raw material available and the amount of raw material that can be processed. 78 % of the producers surveyed are in favor of PILADORA MÍA purchasing corn produced in the Ventanas canton (44 % agree and 34 % strongly agree).

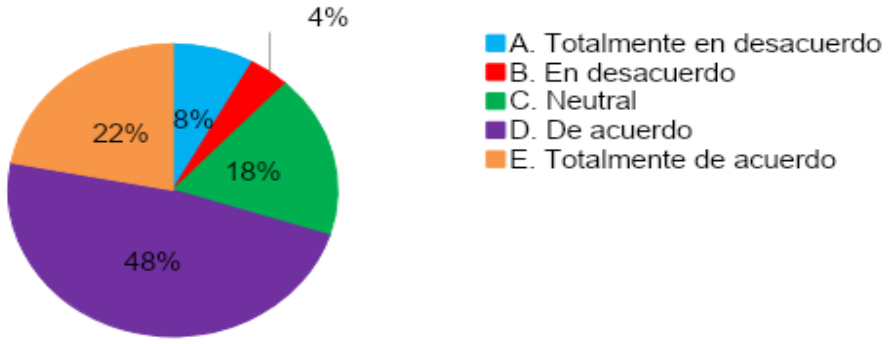

Figure 4. Do you think it would be appropriate for PILADORA MÍA to purchase corn produced in other cantons, considering basic quality parameters?

Forty-eight percent of producers agree with seeking other sources of raw material supply as long as quality standards are met. In turn, 22 % strongly agree.

Return on investment

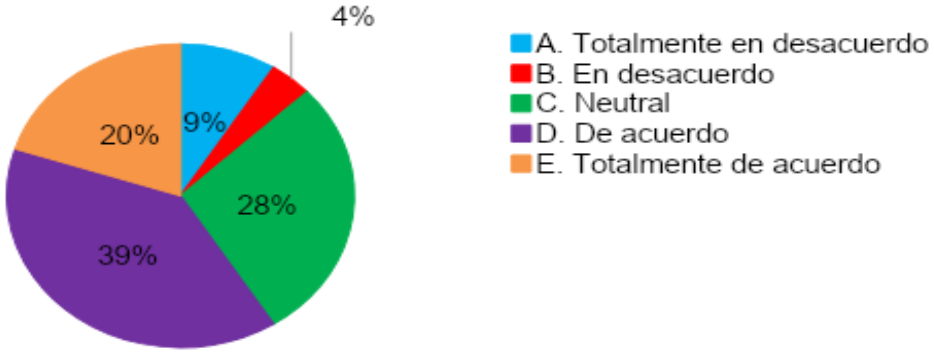

Figure 5. Do you think the price paid by PILADORA MÍA for corn is appropriate, considering the reference table provided by the Ministry of Agriculture?

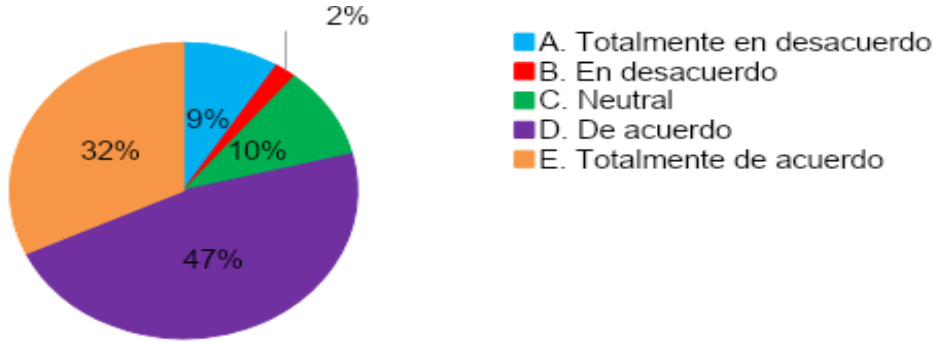

Figure 6. Do you think it would be appropriate for PILADORA MÍA to seek new markets?

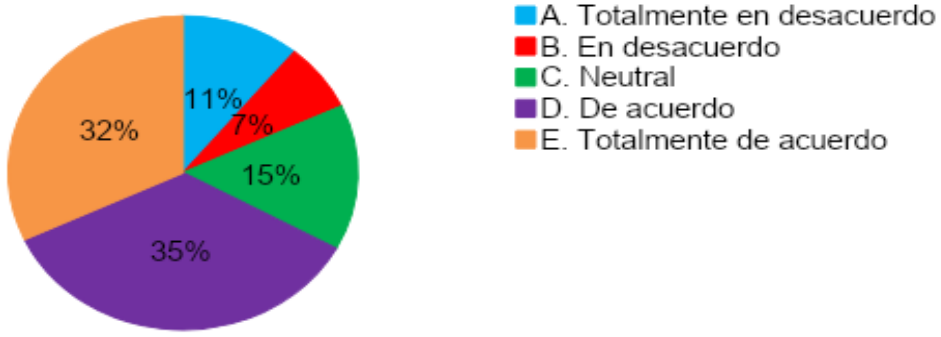

Figure 7. Do you think that increasing raw material levels (supply) will increase demand at PILADORA MÍA?

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Of the 100 farmers surveyed, 39 % and 20 % agree and strongly agree, respectively, that PILADORA MÍA pays an appropriate price for corn, considering the reference table provided by the Ministry of Agriculture. 79 of those surveyed indicated that they view PILADORA MÍA expanding its market for the sale of its products positively (47 agree and 32 strongly agree).

Of the 100 respondents, 35 % agree and 32 % strongly agree that increasing raw material levels (supply) at PILADORA MÍA will increase demand.

Investment proposal for PILADORA MÍA

This investment proposal arises from the lack of investment projects, which has resulted in difficulties for PILADORA MÍA to achieve economic development. In addition, PILADORA MÍA has machinery that is not being fully utilized due to a shortage of raw materials, compounded by seasons when agricultural production declines, causing a deficit in the production process. The above has led to stagnation in production at PILADORA MÍA and, consequently, in the company's economy.

With the correct implementation of an investment proposal, future financial problems can be prevented and the failure of the company avoided. To this end, an initial investment of $551 500,00 in raw materials was considered, of which 60 % ($330 900,00) will be financed by a bank and 40 % ($220 600,00) will be self-financed.

In addition, financial projections of costs, sales, and salaries for the company over a 5-year period were presented. The income statement, cash flow, NPV, and IRR were also considered, resulting in a cash flow of $1 714 271,35 for year 1; $1 718 701,29 for year 2; $1 730 636,17 for year 3; $1 749 700,98 for year 4; $1 749 975,73 for year 5. Also, the NPV was $6 586 493,06 (positive NPV) and an IRR of 18 %, with a discount rate of 10 % used to evaluate the project.

DISCUSSION

The results obtained are directly related to the evaluation of the feasibility of the investment proposal aimed at increasing the supply of raw materials for the company "PILADORA MÍA," a process that, according to Clavijo[2], involves allocating financial resources to the acquisition of assets with the aim of obtaining a higher return in the future.

Need for Investment and Business Strategy

There was strong consensus among the producers surveyed (76 % agree/strongly agree) on the need for an investment plan for raw materials. These statements suggest that, even from the producer's perspective, investment is essential and will serve as a source of local employment and marketing. This need for growth is in line with the definition of productive or economic investment, which consists of the acquisition of fixed assets linked to the company's productive activity. In addition, the growth strategy sought is internal, as it involves expanding the company because potential demand has exceeded current supply.

A key finding supporting this investment is the broad support (80 % of producers) for balancing the amount of existing raw material and the amount that can be processed (ground/crushed). This indicates that the supply problem is so severe that it is preventing PILADORA MÍA from using its installed capacity and reaching its effective capacity, a situation that, if corrected, would reduce losses for farmers and ensure that the mill has the quantities necessary for better management of the raw material.

Regarding the procurement strategy, the proposal (third objective) found that farmers (78 %) support the procurement of corn produced in the Ventanas canton, prioritizing local suppliers due to their proximity. However, 70 % also support purchasing corn from other cantons in case of shortages. This is crucial for the financial strategy, as it allows for diversification of suppliers to ensure a continuous supply of raw materials and avoid price fluctuations or shortages, as recommended for logistics management. Gómez-Manjarrez et al.[12] in their study for the Don Maíz company in Colombia, concluded that the implementation of improvements in production lines, specifically the acquisition of a mill and two mixers, was necessary to reduce manual labor and achieve a 7 % increase in productivity. Similar to PILADORA MÍA, investment in fixed assets is the way to make the buying and selling process more efficient, reducing drying and grinding times and speeding up product output.

The financial analysis of the investment proposal, which must be evaluated using systematic and scientific techniques to support the success of operations, showed an initial investment of $551 500,00. The profitability indicators were compelling. A positive Net Present Value (NPV) of $6 586 493,06 was obtained. According to Chumacero[9] a positive NPV indicates that the project will generate value and is therefore considered viable. An Internal Rate of Return (IRR) of 18 % was obtained. Since the IRR is higher than the discount rate used to evaluate the project (10 %), the investment is considered profitable. These results are consistent with the findings of other investment projects seeking economic and financial viability, reinforcing the application of financial strategy in the sector. For example, Herrera[13], in his investment project for a distillation plant in Cajamarca, Peru, also used NPV and IRR indicators to assess viability. The results showed a positive economic

and financial NPV and a considerably high IRR (84,3 % economic and 51,03 % financial), concluding the technical and economic viability of the project. As in PILADORA MÍA, the use of these indicators confirms that the investment will generate value.

Other similar studies reviewed, such as that by Alcívar-Gómez and Pinos-Vélez[14] on an investment project for guinea pig processing in Napo, Ecuador, also concluded positive feasibility by using surveys to determine consumer demand for the product. For their part, Ramos-Ramos et al.[15] in their study in Ecuador on cocoa processing, also demonstrated favorable economic viability with a return on investment in less than a year.

In short, by increasing raw material levels (supply), 79 % of respondents believe that demand will increase. This is a fundamental principle of the Law of Supply and Demand, where Guzmán[8] points out that the quantity demanded is inversely proportional to price, but by increasing supply and satisfying the market, a balance is achieved between producers and consumers. The robust financial viability (positive NPV and IRR of 18 %) indicates that the company will be in a position to expand and satisfy a percentage of the unmet demand in the province of Los Ríos, achieving the internal growth envisaged in the financial strategy.

CONCLUSIONS

This research demonstrates that the investment proposal to increase the supply of raw materials at PILADORA MÍA is technically, operationally, and financially viable. This conclusion is based on two fundamental pillars: the favorable perception of corn producers and the project's solid financial indicators. From the perspective of key players in the supply chain, a critical need to resolve the supply bottleneck was identified. The company operates at an effective capacity of 1,000 quintals, which represents only 50 % of its installed capacity (2 000 quintals), significantly underutilizing its infrastructure and machinery. Support from producers was overwhelming: 74 % supported the implementation of the investment to boost the company's economic growth, 76 % considered it appropriate to develop a raw material investment plan, and 80 % agreed on the critical need to balance the volume of existing raw material with the mill's processing capacity. This support not only validates the strategy, but also guarantees a committed source of supply and prioritizes local sourcing. Financially, the proposal is highly profitable and generates value. Analysis using the most recognized indicators yielded a positive Net Present Value (NPV) of $6 586 493,06 and an Internal Rate of Return (IRR) of 18 %, which comfortably exceeds the 10 % discount rate used as a reference. These results confirm that the investment will not only be recovered, but will also generate a substantial economic surplus. Consequently, the implementation of this investment plan—which includes a mixed financing model (60 % bank financing and 40 % own financing) and a supply strategy that prioritizes local producers without ruling out external sources—will allow PILADORA MÍA to optimize the use of its resources, achieve its internal expansion, and satisfy a significant percentage of the unmet demand in the province of Los Ríos, thus consolidating its position in the market and laying the foundations for sustainable economic growth.

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CONFLICT OF INTEREST

None.

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