

ANALYSIS OF MANAGEMENT AND CONTROL IN SWINE FEED PRODUCTION AT A MILL LOCATED IN THE SOUTH-CENTRAL REGION OF PARANÁ¹

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Abstract

This study addresses the importance of management accounting and benchmarking in the management of a swine feed mill located in the South-Central region of Paraná, an industry of considerable importance to Brazilian agribusiness. Its primary objective is to identify and analyze the accounting techniques used to control the mill and its production, thereby promoting operational efficiency and effective inventory control. Using a descriptive methodology, the study involved a literature review and field data collection through interviews and direct observation. The results indicate that management accounting supports strategic planning and inventory control, while benchmarking enables the assessment and introduction of process improvements. The study identified deficiencies in input traceability and control processes that affect efficiency and costs, and recommended automation measures to streamline the production flow. Implementing these accounting practices has the potential to reduce resource waste, thereby increasing the mill's competitiveness. The study concludes that management focused on the early identification of

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problems, based on management accounting and benchmarking, is indispensable for continuous improvement in the swine feed production industry.

Keywords: Benchmarking, Inventory control, Management accounting, Operational efficiency, Production management.

INTRODUCTION

Agribusiness plays a prominent role in the global economy and is one of the pillars of food security and economic development. In Brazil, its relevance is even greater, as the country is the world's third-largest exporter of agricultural products (CNA, 2023).

Among the various agribusiness segments, swine farming stands out for its significant contribution to the domestic market and its substantial presence internationally. Following the records achieved in 2023, Brazil consolidated its position as the world's fourth-largest pork producer, demonstrating the strength of the country's agribusiness in the global market (ABPA, 2024).

Paraná plays a major role in agribusiness. It is one of Brazil's leading producing states and the country's largest producer of poultry and pork, as well as its second-largest producer of soybeans and corn, which are essential feed ingredients (AEN, 2023).

Industrial feed production is increasing steadily due to the annual growth in demand from swine farming. According to the Brazilian Animal Protein Association (Associação Brasileira de Proteína Animal—ABPA), national pork production reached a record 5.16 million metric tons in 2023, corresponding to 4% of global production and positioning Brazil as the world's fourth-largest producer, behind China, the European Union, and the United States. In September 2024, 120,400 metric tons of pork were exported, exceeding expectations and favorably positioning the country for continued growth in the ranking.

Of the total produced in Brazil, 75% is consumed domestically, while the remainder is exported. The continued growth in demand from swine farming generates a greater need to produce feed for these

animals. From this perspective, management accounting and benchmarking are important tools for controlling and managing these production facilities (Agência Estadual de Notícias, 2023).

According to Garrison (2013), management accounting is related to activities such as control, planning, and decision-making. Planning involves establishing specific objectives to be achieved, whereas control involves ensuring that actions are properly implemented and positively adjusted as circumstances change.

Within this context of constant advancement, feed mills must continually seek to improve their control and management methods, particularly to increase production and maintain adequate control over the areas involved.

It is essential to emphasize the importance of inventory measurement, considering that the investment involved is significant and represents a substantial portion of costs. Adequate planning is therefore necessary to make purchases efficiently and assess whether inventory is appropriate for effective management (Martins, 2000).

The examples above demonstrate that this business segment has undergone major changes, including significant adjustments to its internal processes, whether in planning, management, measurement, or the interpretation of results.

Against this background, the following research question was adopted: How can management accounting and the accounting practice of benchmarking be used in the management of a feed mill, and what are the positive effects of their implementation?

This study is justified by the growing need to develop effective control and management methods that can be adopted by a medium-sized swine feed mill. Such facilities face considerable challenges arising from the pursuit of higher financial returns and the need to prevent avoidable losses during the production process.

From this perspective, the investigation is also justified by the growing need for effective management control capable of enabling a more detailed analysis and specifying the costs and expenses

incurred during the period analyzed. Such control is essential to financial and operational efficiency and, consequently, to success in the market. Moreover, more effective management provides a solid basis for strategic decision-making, minimizing waste and maximizing the use of resources. This study provides information on improvements that may be applied to enhance management, particularly in swine feed production, while addressing the challenges facing this industry.

Based on the general objective of this study, the principal management accounting techniques and practices used in the management and production processes of a swine feed mill located in the South-Central region of Paraná were identified and analyzed.

More specifically, the study identified the accounting tools and practices employed in managing the mill, highlighted the use of benchmarking in management accounting to provide more relevant and accessible information, and examined, from the manager's perspective, whether these practices were being properly applied to the mill's control and management.

To achieve these objectives, methods and procedures were applied to analyze the management and control of swine feed production at a mill located in the South-Central region of Paraná.

This research was classified as descriptive because it sought to observe, record, and analyze the data in depth, thereby contributing to a clearer understanding of the subject. Regarding its procedures, the study was bibliographic and drew on renowned and reliable sources to provide an appropriate perspective (Marconi; Lakatos, 2017).

The study population encompassed all swine feed mills located in the South-Central region of Paraná. The selected sample consisted of one specific swine feed mill in this region, chosen because of the availability of information and the application of management accounting techniques in its processes.

Data were collected through semi-structured interviews, observations in the production and inventory areas, and an analysis of the mill's inventory control tools.

DEVELOPMENT

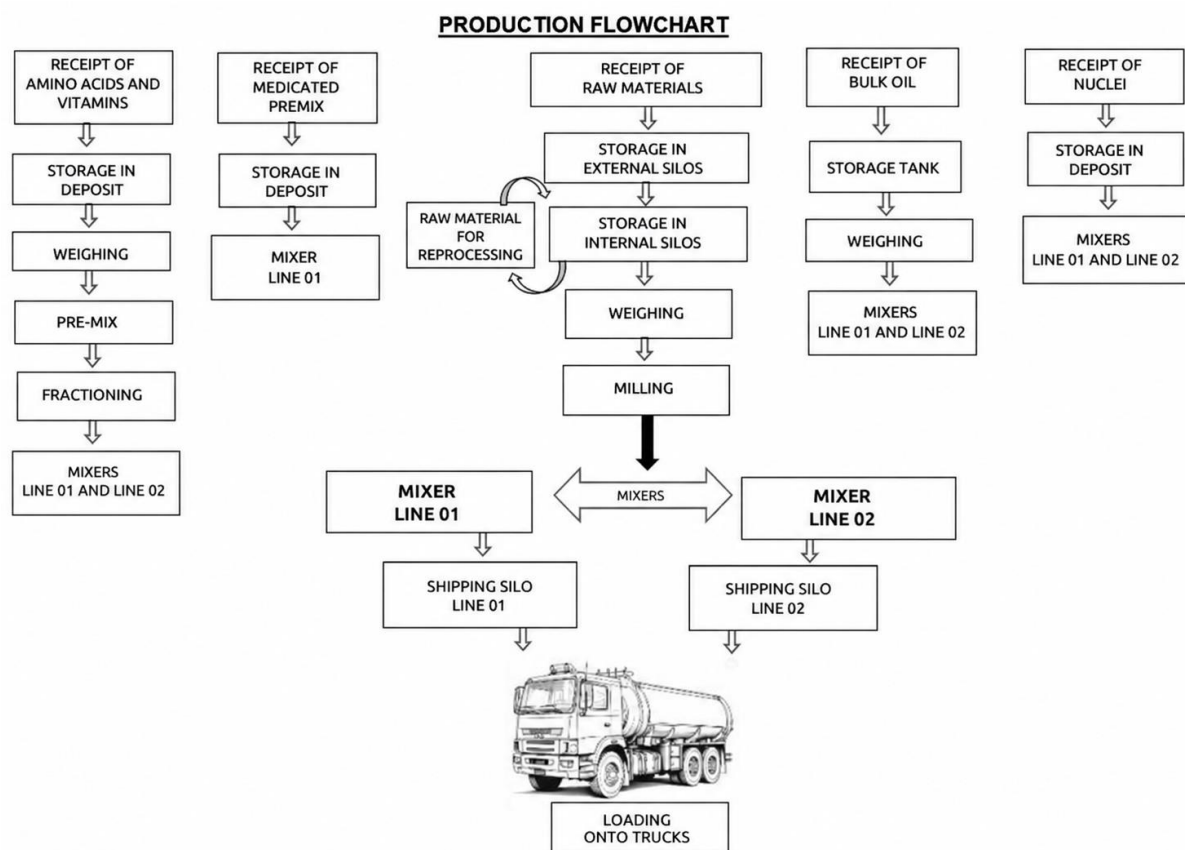
This section seeks to present and examine the methods and procedures used to analyze the management and control of swine feed production at the mill located in the South-Central region of Paraná. It reviews the literature related to the subject of the study and describes the methodology and the data collected. The results are then analyzed, focusing on the principal techniques and practices identified in the research. Finally, the findings are critically examined in relation to the study objectives, and recommendations are proposed for future management practices at the mill.

To obtain the data, particular attention was given to how the mill organizes its internal processes. It should be noted that the mill has been undergoing major changes since July 2024 as a result of improvements suggested by the Ministry of Agriculture and Livestock (Ministério da Agricultura e Pecuária—MAPA), which have contributed to a significant reorganization (Ministério da Agricultura e Pecuária, 2024).

The production flowchart illustrates the current state of the processes and incorporates the changes implemented to make them easier for employees to locate and understand. These processes are continuously updated, and new methods are being implemented to improve efficiency and performance. Figure 01 therefore presents the processes from the receipt of materials through the loading of the finished product for delivery to its destination.

Figure 01

Current Flowchart of the Production Process at the Mill Analyzed.



Source: Authors (2024).

Based on this process mapping, the study revealed the difficulty of maintaining effective inventory control because of the multiple interactions and changes involving order logistics, receipt, and production. Inadequate inventory measurement may result in high and unnecessary expenditures.

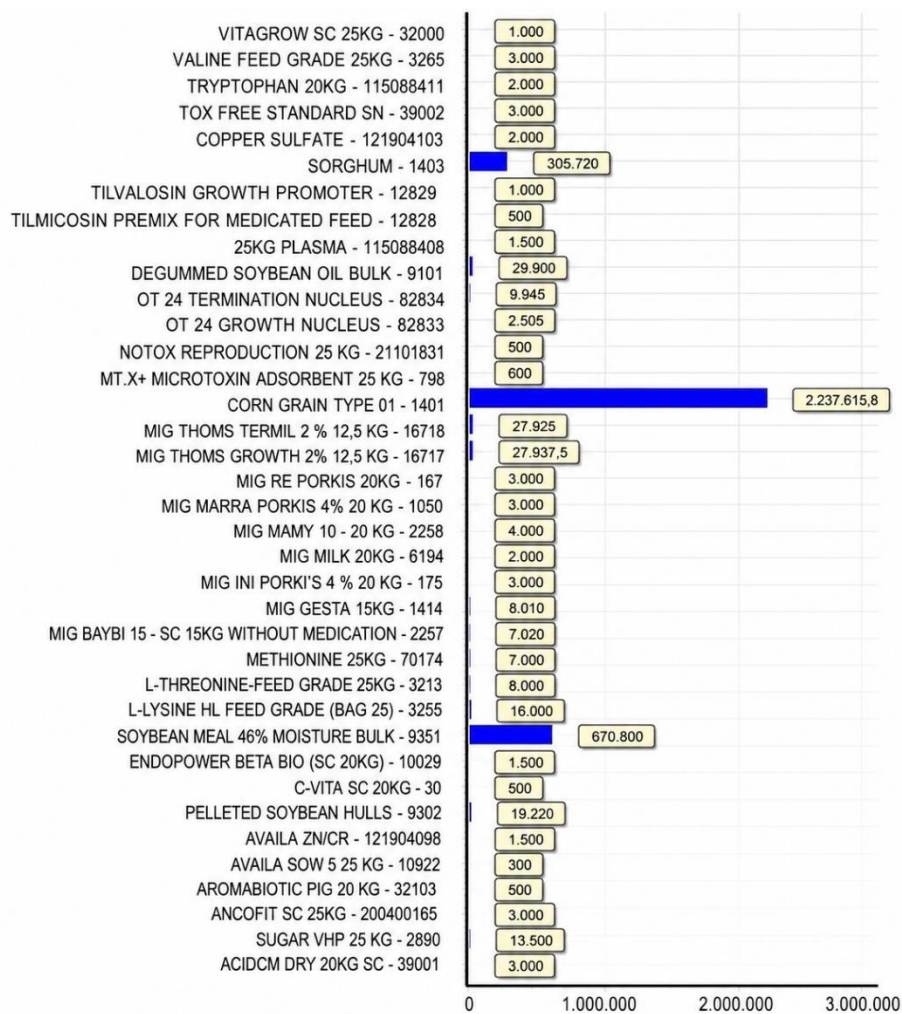
These problems initially arise in the internal control software, where unrecorded physical errors may cause discrepancies between system-recorded and physical inventory. It should also be noted that, in several situations, products are received and sent directly to production, resulting in errors that compromise the quality of the final product.

Management accounting is essential to the control and management of companies in various industries, including, in this case, a feed mill. It provides detailed and relevant information that allows managers to make decisions aimed at optimizing production processes.

The use of accounting tools can help identify and eliminate inefficiencies, improve inventory control, and ensure the quality of the final products. More effective traceability and production-batch monitoring can be incorporated into the existing system, enabling discrepancies between system-recorded and physical inventory to be corrected.

Because of the intense flow involved in receiving various raw materials, as shown in Figure 02, most of which are microingredients, particular attention is given to vegetable oil, soybean meal, corn, and other items whose availability varies according to the seasons and crop cycles. Components such as sorghum may improve feed efficiency.

Figure 02
Quality of Raw Materials Received, October 2024.



Source: Adapted from Siga Fran (2024); translated for clarity.

Benchmarking is a technique used in the marketplace to compare an organization's practices with the practices and trends of more advanced companies. This comparison makes it possible to identify areas that can be reviewed to improve performance across all departments. According to Belo (2022), by learning from industry best practices, companies can increase their competitiveness and capacity for innovation through benchmarking.

Bulk feed involves a set of specifications and differences. Before loading, it undergoes several processes, many of which are slow, resulting in less effective production that is insufficient to meet the requirements of a full day. Production operates with a minimum safety margin equivalent to half a day, and the schedule is adjusted according to the needs of the main producers.

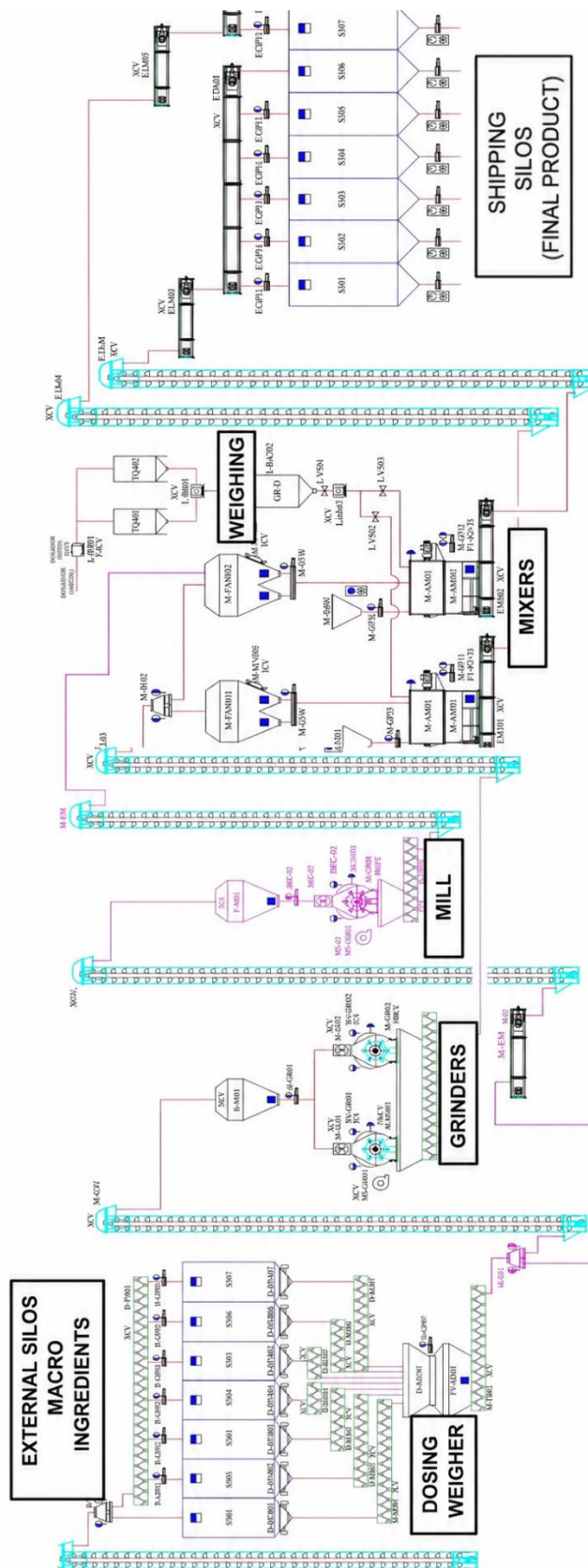
The slowest stages of the process are micronutrient separation and weighing, which are currently performed manually. Silos and automated scales could be integrated into the same system, which would accelerate the process, reduce the margin of error, and improve working conditions for employees.

In addition to the suggested changes, the dosing of the macronutrients and liquids included in the final product should also be highlighted. The mill currently has automated scales that perform dosing for two production lines. Based on estimation studies already conducted, increasing the number of scales so that each line has its own dosing system could optimize production and increase output by more than 50%.

Figure 03 shows that the two lines remain separate only after grinding, although they are interconnected at the liquid-dosing scale before the process is completed. The figure provides an understanding of the entire process through the functions offered by the system.

Figure 03

Internal System.



Source: Adapted from Siga Fran (2024); translated for clarity.

Controlling feed-quality criteria is difficult because traceability is ineffective without the necessary supervision. Owing to inventory discrepancies, the batches used in the processes are not properly monitored.

The continued failure to update prices also makes feed pricing difficult. Although the costs of energy, labor, and other processes are established, the prices of amino acids, premixes, supplements, and vitamins are not updated. Despite representing only a small proportion of the feed composition, these are the most expensive components and may cost as much as one hundred Brazilian reais per kilogram.

The study found that some functions of the system used by the mill are underutilized, resulting in inefficiencies in processes that could otherwise be simpler and more agile. Production deficiencies that could be addressed were also identified, which would lead to greater efficiency and better use of the available resources.

The limited management accounting practices already in use have helped maximize the use of existing functions, while benchmarking has supported the effective analysis and introduction of new functions within the current system. The objective is to identify and address production deficiencies, thereby increasing efficiency and improving the use of available resources.

From the manager's perspective, management accounting and benchmarking are essential to optimizing processes and identifying areas for improvement. From this standpoint, the mill faces challenges in inventory control and in the operational area of bulk-feed production because the system's functions are used only superficially, contributing to outdated input prices.

FINAL CONSIDERATIONS

This study demonstrated the importance of management accounting and benchmarking in improving the internal processes of a swine feed mill. The analyses showed that properly applying these practices can lead to significant production optimization and effective inventory control.

Management accounting proved essential to providing accurate and relevant information, thereby enabling managers to make sound decisions and implement significant strategic improvements. Its integration with the system enhanced the use of production-batch traceability techniques and supported the correction of inventory discrepancies.

Benchmarking practices are essential to the continuous improvement of organizations because they enable improvements to be identified and implemented on the basis of systematic and rigorous comparisons. The principal benchmarking practices and their descriptions include the following:

- **Performance Indicators:** involve measuring and comparing internal processes to assess operational effectiveness and identify areas for improvement;
- **Process Analysis:** consists of reviewing and comparing operational processes to identify potential improvements and optimizations that may be adopted;
- **Market Research:** refers to analyzing competitors and market trends while continually seeking new methods and improvements to existing methods in order to remain competitive;
- **Best-Practice Mapping:** involves identifying the most effective practices used by other companies so that they may be adapted and implemented within the organization;
- **Balanced Scorecard:** involves using a balanced set of indicators to assess organizational performance, providing a broad and balanced view of results;
- **Functional Benchmarking:** focuses on comparing processes and functions within the company itself in pursuit of continuous improvement and operational efficiency.

Benchmarking stood out as an essential methodology for identifying and implementing the best practices suited to each department, revealing areas for improvement that increased competitiveness and operational efficiency.

Challenges involving inventory control and production were addressed through internal improvements and process reviews, resulting in more efficient production and better use of existing resources.

This study confirms the need for proactive and well-informed management that uses management accounting and benchmarking as pillars of growth and operational excellence at this swine feed mill located in the South-Central region of Paraná.

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