

Absorption costing in the production of canned feijoada: A case study

*Custeio por absorção em uma fabricação de feijoada
enlatada: Um estudo de caso*
*Costo de absorción en una fabricación de feijoada
enlatada: Un estudio de caso*

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Abstract: This study aimed to apply the absorption costing method in a food company, using the production of industrialized feijoada as the primary data source. The theory demonstrated that the application of this method provides an accurate view of the manufacturing costs for any product. The methodology was based on bibliographic and quantitative research, and the case study method was used to analyze three variations of the same product, feijoada. The data were collected on-site, and one of the authors is an employee of the company. The absorption costing analysis revealed a complete approach to attributing costs, encompassing both direct and indirect costs related to manufacturing canned feijoada. It was concluded that from the costing method, the total manufacturing cost of three variations of the same feijoada and the sum of them was visualized. The analysis of absorption costing applied to the production of canned feijoada showed the direct and indirect costs necessary to calculate the allocation of all costs in the production process phase up to the total cost.

Keywords: Production; Food company; Direct Costs; Indirect Costs.

Resumo: Este estudo teve por objetivo aplicar o método de custeio por absorção em uma empresa do setor alimentício, utilizando a produção de feijoada industrializada como principal fonte de dados. A teoria demonstrou que a aplicação desse método proporciona uma visão precisa dos custos de fabricação de para quaisquer produtos. A metodologia foi baseada em uma pesquisa bibliográfica, quantitativa e utilizando o método de estudo de caso, analisando três variações de um mesmo produto, a feijoada. Os dados foram coletados in loco, sendo que um dos autores é funcionário da mesma. A análise do custeio por absorção revelou uma abordagem completa na atribuição de custos, englobando tanto os custos diretos quanto os indiretos relacionados à fabricação da feijoada enlatada. Conclui-se que a partir do método de custeio aplicado, visualizou-se o valor total de fabricação de três variações da mesma feijoada e da soma dos mesmos. A análise do custeio por absorção aplicado à produção de feijoada enlatada mostrou os custos diretos e indiretos que foram necessários para se calcular o rateio de todos os custos da fase do processo de produção, até o custo total.

Palavras-chave: Produção; Empresa alimentícia; Custos Diretos; Custos Indiretos.

Resumen: Este estudio tuvo como objetivo aplicar el método de costeo por absorción en una empresa del sector alimentario, utilizando como principal fuente de datos la

producción de *feijoada* industrializada. La teoría demostró que la aplicación de este método proporciona una visión precisa de los costos de fabricación de cualquier producto. La metodología se basó en una investigación bibliográfica, cuantitativa y utilizando el método de estudio de caso, analizando tres variaciones de un mismo producto, la *feijoada*. Los datos fueron recolectados *in loco*, y uno de los autores es empleado de la misma. El análisis del costo por absorción reveló un enfoque completo para la asignación de costos, que abarca tanto los costos directos como los indirectos relacionados con la fabricación de *feijoada* enlatada. Se concluye que, a partir del método de costeo aplicado, se visualizó el valor total de fabricación de tres variaciones de esta *feijoada* y la suma de las mismas. El análisis de costeo por absorción aplicado a la producción de *feijoada* en conserva mostró los costos directos e indirectos que fueron necesarios para calcular el prorrateo de todos los costos de la fase del proceso productivo, hasta el costo total.

Palabras clave: Producción; Empresa de alimentos; Costos Directos; En lo alto.

1. INTRODUCTION

Feijoada is one of the most emblematic dishes of Brazilian cuisine. With its combination of intense flavors and diverse textures, it conquers palates around the world. Even though it is the most representative delicacy of the nation, it does not fail to present variations throughout the country, which can be in how it is prepared, the chosen beans, and the side dishes.

However, behind this delicious delicacy lies the emergence and complex production process that involves careful selection of ingredients, meticulous preparation, and a considerable financial cost. Therefore, many consumers have chosen to buy and consume easy-to-eat foods for their daily lives, one of which is canned food, which is an excellent advantage for those who, due to lack of time, do not need to cook to consume the food.

Studying the cost of producing feijoada reveals the economic challenges faced and provides valuable insights into resource management in one of Brazil's most beloved gastronomic traditions.

Furthermore, absorption costing is a method widely used by companies to consider all costs generated, including those directly linked to the production of a given product.

Therefore, this article aimed to apply the absorption costing method to identify the factors that make up the production cost of industrialized feijoada so that the company can evaluate its daily production costs and compare them with its sales to obtain its profit.

2. THEORETICAL BASIS

2.1 The Feijoada

For Lacerda (2023), the creation of feijoada in Brazil was strongly influenced by some dishes that already existed in Europe. However, the Brazilian version of these dishes emerged around the 19th century.

However, during elementary school, the story told in which the main characters are black people and their masters, as reported by Carneiro, "[...] is usually presented as an expression of Brazilian racial fusion, a dish made by black people with the less noble parts of the pig and beans, of American origin, in a stew using European techniques" (CARNEIRO, 2005, p.76). In this narrative, the servants who invented the dish, which used the pig's meat discarded by their masters, such as feet, tail, and tongue, were added to the cooked beans. The purpose of this combination was to spread the recipe and popularize it so that it would enter the Casa Grande, as the residence of Portuguese farmers was called, and their kitchens, taking on continental proportions, according to Elias (2007).

Despite all the historical and oppressive events that occurred during slavery, it can be seen that this narrative ignores the contributions of native Brazilians, who already had black beans in their meals long before the colonizers arrived here (LACERDA, 2023).

2.2 Absorption Costing Method

According to Santos Junior (2012), absorption costing is a cost allocation method that encompasses all expenses incurred by the company throughout the manufacturing process. These costs can be classified as direct or indirect, variable or semi-variable, and even fixed. The fundamental purpose of this method is its application in calculating income tax.

It is the "only method accepted by commercial and tax legislation in Brazil, through which all production costs are recognized as expenses only at the time of sale, demonstrating more appropriately the confrontation between revenue and expenses in the calculation of the result," which is why the inspection bodies in Brazil accept it. (SILVA, 2018, p. 157). Given that no alternatives employed cost absorption techniques, Absorption Costing ended up becoming known simply as "absorption costing."

The Absorption Costing Method allocates fixed and/or indirect costs to products (LEONE; LEONE, 2004).

In this context, Silva (2018, p. 159) adds that indirect costs "cannot be directly allocated to each type of good or cost function at the time of their occurrence and are common to two or more costing objects." This occurs through estimates, allocation criteria, and cost behavior forecasting, among other methods.

Therefore, the allocation method becomes crucial whenever the need arises to allocate indirect costs. Allocation is estimated and proportional to the allocation basis or criterion used.

Stuhkert, Borgert, and Engelage (2021) clarify that cost allocation represents assigning an indirect cost to a cost object based on a specific reference, which is the allocation basis used to distribute the cost items.

"The absorption cost criterion is flawed because it works intensively with indirect costs, distributing them through dubious bases between departments and between products" (LEONE, 2000, p.241).

According to Padoveze (2003, p.100), "departmentalization for cost accounting purposes involves the accounting classification of expenses, separating them by consumer sector of these expenses."

For a manufacturing company aspiring to cost leadership amid the increasing globalization of the economy, it is essential to maintain a continuous strategic approach to production. This implies not only ensuring product quality and meeting delivery deadlines that meet customer demands but also adopting a comprehensive approach to waste reduction, aiming to eliminate all processes and functions that do not add value to the product (DA SILVA BIDES; DA GAMA SILVA; RAMOS, 2021).

The purpose of the absorption costing method is to allocate all its components, fixed and variable, at each stage of the production process. Therefore, a cost is considered absorbed when assigned to a product or unit of production. Consequently, each unit or product will receive its proportional share of the costs

until the amount applied is fully incorporated into the costs of products sold or final inventories (NEPOMUCENO; DE CARVALHO NUNES; RODRIGUES, 2024).

3. THEME DEVELOPMENT

3.1 Methodology

To carry out this article, bibliographical and descriptive research of a quantitative nature was necessary to improve knowledge and obtain good results.

Bibliographic research is characterized by reading books, academic articles, newspapers, or other technical or academic material to provide a complete view of a specific topic (OLIVEIRA, 2022).

Exploratory, descriptive research is one of the techniques most used by researchers. It aims to provide information about what is being studied through methods and criteria, aiming at an overview of a particular event. It can be done through interviews with people involved with the problem using forms to collect data, which will later be analyzed (DA SILVA; SOARES; MARTINS., 2020).

Quantitative data present the numbers that prove the general objectives of the research (MACHADO, 2021).

In addition, the case study method was also applied using data from a real food company with more than 140 production units worldwide and a team of more than 120,000 employees. Its trajectory is characterized by an aggressive growth strategy, marked by acquisitions of slaughterhouses and units producing fresh and processed meat.

According to Yin (2001), a case study is a form of research comprising a method that encompasses everything in specific approaches to data collection and analysis since it is

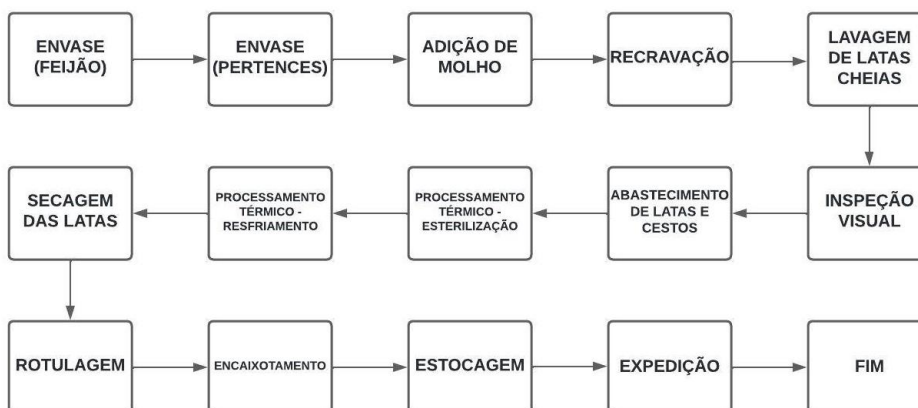
possible to access information about the company and its employees aiming at data collection. This occurred in this research, as one of the authors is an employee of the company.

3.2 Case Study

Figure 1 shows the feijoada production process step by step before the product leaves the company for the market.

The company produces three grammages of canned feijoada: 310g, 430g, and 830g. With this variety of grammage, consumers can choose which one meets their needs. The 310g can of feijoada contains a smaller portion that serves one person. In comparison, the 430g can contain an intermediate portion that serves a small family. Finally, the 830g can become a more significant portion that serves a more prominent family.

Figure 1– Flowchart of the feijoada production process



Source: Prepared by the authors

In the industry, data was collected on the components involved in the feijoada manufacturing process, such as the quantities in grams, the value of the components per kilo, and their final cost in reais, obtained by multiplying the first two items in Table 1. Table 1 shows other costs in the manufacturing process related to product packaging.

Table 1- Unit costs of canned feijoada 310 g

Tabela - Custos Unitários de feijoada enlatada 310g			
Ingredientes	Quantidade (g)	Valor (Kg)	Custo (R\$)
Feijão Preto seco	39,68	R\$ 6,85	0,271808
Molho para feijoada	180,42	R\$ 0,43	0,0766785
Linguiça mista	41,85	R\$ 8,26	0,345681
Conserva Bovina picada	48,05	R\$ 4,69	0,2253545
Folha de louro (unidade)	1	R\$ 0,01	0,000005
Total	310 G		0,919527
Embalagens	Quantidade	Custo	
Lata (unidade)	1	R\$ 1,46	
Tampa (unidade)	1	R\$ 0,27	
Total	-	R\$ 1,73	
Custo de produção	R\$ 2,65		

Source: Prepared by the authors

Thus, with the data collected on the costs per kilogram of raw material used and the quantity required to manufacture the 310 g can, the total cost of this production was calculated at R\$2.65 per can, as seen in Table 1.

Table 2- Unit costs of canned feijoada 430 g

Tabela - Custos Unitários de feijoada enlatada 430g			
Ingredientes	Quantidade (g)	Valor (Kg)	Custo (R\$)
Feijão Preto seco	55,04	R\$ 6,85	0,377024
Molho para feijoada	250,25	R\$ 0,43	0,10635625
Linguiça mista	58,05	R\$ 8,26	0,479493
Conserva Bovina picada	66,65	R\$ 4,69	0,3125885
Folha de louro (unidade)	1	R\$ 0,01	0,000005
Total	430 G		1,27546675
Embalagens	Quantidade	Custo	
Lata (unidade)	1	R\$ 1,58	
Tampa (unidade)	1	R\$ 0,31	
Total	-	R\$ 1,89	
Custo de produção	R\$ 3,17		

Source: Prepared by the authors

Using the data collected on the costs per kilogram of raw material used and the quantity required to manufacture the 430 g can, the total cost of this production was calculated at R\$3.17 per can (Table 2).

Table 3- Unit costs of canned feijoada 830 g

Tabela - Custos Unitários de feijoada enlatada 830g			
Ingredientes	Quantidade (g)	Valor (Kg)	Custo (R\$)
Feijão Preto seco	106,24	R\$ 6,85	0,727744
Molho para feijoada	483,05	R\$ 0,43	0,2052963
Linguiça mista	112,05	R\$ 8,26	0,925533
Conserva Bovina picada	128,65	R\$ 4,69	0,6033685
Folha de louro (unidade)	1	R\$ 0,01	0,000005
Total	830 G		2,4619468
Embalagens	Quantidade	Custo	
Lata (unidade)	1	R\$ 1,63	
Tampa (unidade)	1	R\$ 0,33	
Total	-	R\$ 1,96	
Custo de produção	R\$ 4,42		

Source: Prepared by the authors

Using the data collected on the costs per kilogram of raw material used and the quantity required to manufacture the 830 g can, the total cost of this production was calculated at R\$4.42 per can (Table 3).

4. RESULTS AND DISCUSSION

As seen in the previous tables, research was carried out to obtain the cost of each ingredient, after which a calculation was made to determine the production cost of each can of feijoada.

Based on the value of the production cost per unit, the survey was calculated for one day's production with 20,000 units of each weight, as can be seen below in Table 4.

Table 4- Production cost

Matéria Prima		
Produto	Valor de produção	Produção de 20.000
Feijoada Enlatada 310 g	R\$ 2,65	R\$ 53.000,00
Feijoada Enlatada 430 g	R\$ 3,17	R\$ 63.400,00
Feijoada Enlatada 830 g	R\$ 4,42	R\$ 88.400,00

Source: Prepared by the authors

After calculating the production cost of a can, the cost of production for that day was determined by using an average of 20,000 cans produced in one day of each weight.

The indirect costs used were those of the raw materials needed for production and the employees' salaries. Fifteen employees were needed for production, with an average salary of R\$1,700.00. The salaries alone totaled R\$25,500.00, and the total production cost was R\$25,510.24. A summary table is prepared with all costs, as shown in Table 5.

The table above calculated the total cost at R\$230,300.00, relating the direct and indirect costs for producing 20,000 cans of feijoada from the three categories studied.

Table 5– Summary Table of Direct and Indirect Costs

	Diretos			Indiretos	Total
	Feijoada 310 g	Feijoada 430 g	Feijoada 830 g		
				-	-
Matéria Prima	R\$ 53.000,00	R\$ 63.400,00	R\$ 88.400,00	-	R\$ 204.800,00
Mão de obra	-	-	-	R\$ 25.500,00	R\$ 25.500,00
Total	R\$ 53.000,00	R\$ 63.400,00	R\$ 88.400,00	R\$ 25.500,00	R\$ 230.300,00

Source: Prepared by the authors

Based on the absorption cost method, the indirect manufacturing costs (CIF) were allocated for each of the products studied, and the following values were obtained, as can be seen in Table 6 below:

Table 6- Allocation Based on Direct Costs

Produto	Custo Direto	%	Custo Indireto	Total
Feijoada enlatada 310 g	R\$ 53.000,00	25,88%	R\$ 6.599,12	R\$ 59.599,12
Feijoada enlatada 430 g	R\$ 63.400,00	30,96%	R\$ 7.894,04	R\$ 71.294,04
Feijoada enlatada 830 g	R\$ 88.400,00	43,16%	R\$ 11.006,84	R\$ 99.406,84
Total	R\$ 204.800,00	100,00%	R\$ 25.500,00	R\$ 230.300,00

Source: Prepared by the authors

In the apportionment of CIF based on the direct costs of each product, as can be seen in Table 6, the 310 g feijoada has a percentage of 25.88%, the 430 g 30.96%, and the 830 g 43.16%.

Since the total cost in Table 6 was the same as that calculated in Table 5, at R\$230,300.00, the method was successfully completed. Finally, the company can evaluate its daily production costs and compare them with its sales to obtain its profit.

5. CONCLUSION

Using the costing method, the exact value of the total manufacturing cost of three variations of the same product and their sum was visualized. The analysis of absorption costing applied to the production of canned feijoada showed the direct and indirect costs necessary to calculate the allocation of all costs of the production process phase up to the total cost.

This provided a realistic view of the costs associated with production and was consistent with widely accepted accounting principles.

Therefore, absorption costing in the production of canned feijoada offered a solid approach to cost management for this company. It provided a complete view of the expenses involved and assisted in formulating effective financial and operational strategies, achieving the objectives of this article.

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