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Case for Teaching

The Sea is Getting Rough: Analysis of Incremental Costs during the Pandemic

O Mar Não Está para Peixe: Análise de Custos Incrementais na Pandemia

Discipline: Management Accounting
Subject: Decision Making
Industry: Fishing
Geography: Brazil

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INTRODUCTION

"Cancel all orders! The restaurants are all idle...," the representative of the main and only international customer, based in the United States, told the manager of Pescaria Argo. On the other side of the line, Cícero Medeiros could not hide his apprehension. As manager of the Brazilian fishing company, he was well aware of the news about the measures adopted by the U.S. government to contain the COVID-19 pandemic, including closing the entire hospitality industry in large cities. He was concerned because the company exported tuna to restaurants specialized in Oriental dishes, and he expected demand-side disruption as a result of this circumstance.

Argo had made large investments in both sophisticated vessels and special fishing techniques to export fresh tuna caught in deep waters, which eventually resulted in higher costs. Because of this and its expertise in tuna conservation, it stood out as one of the few companies in the Brazilian industry that were able to meet the requirements of the international market. Its management strategy was based on product differentiation, with a focus on exports to the U.S. market.

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The timing could not be worse. Argo had already faced poor results in recent years, forcedly adapting to both fishing seasonality and the entrance of new competitors in the Brazilian market. To make matters worse, a shipmaster has just broken the news that the company's main vessel had just returned from the sea stocked with tuna.

Cícero realized that the company had to define whether they would wait for the reopening of the U.S. market or sell tuna domestically. This was a difficult decision to make because it involved understanding the associated costs, the risks of the employees being infected, and the development of new sales channels. The company had never faced such a tough decision before!

He was overwhelmed with questions: "Do we expect the international market to reopen? How do we set off the costs of our last fishing? What is the domestic market potential?" Concerned, Cícero decided to hold an emergency meeting with the main leaders of the company. He immediately ordered that all fish be frozen until a decision was made.

CROSSING THE SEA — THE COMPANY'S HISTORY IN THREE STAGES

When the first impacts of the pandemic emerged, the company was already dealing with a challenging financial situation. Argo's history can be summarized in three main stages: a period of growth and little competition before mid-2010; a period of major restrictions and competition in the domestic market from 2011 to 2020; and the current pandemic period, starting in March 2020.

Sailing before the wind — the company before 2010

Founded by Cícero Medeiros, Argo is a Brazilian company that has been operating in the wholesale fish business for almost 20 years. It has specialized in selling prime tuna in the international market, but its main foreign customer was based in the United States.

This commercial partnership emerged from investments that the company made in both infrastructure and fishing/storage techniques. Its robust infrastructure allowed it to fish farther from the coast while its fishing technique provided for fishing in deep waters. Eventually, it was able to fish larger tuna and secure the high quality of its products. Besides, it has secured higher product durability as a result of investments in storage techniques and training as a means to ensure improved fish transportation and conservation.

Because of all these aspects, Argo's management was based on export-oriented differentiation. The high price in the foreign market and the exchange rate offset the higher production costs incurred to meet the export quality standards. During this period, its costs represented just over 50% of its revenue, and its operating margin, a key performance indicator (KPI), was 39.32%.

Warnings of bad weather — difficulties in operating in this market from 2011 onward

The winds started blowing against Argo after 2010. One of the problems was a change in seasonality. Tuna used to be fished practically throughout the year, but fishing decreased to only eight months from 2011 through 2015, with May to August being off-season. This resulted in a sharp drop in revenues in the period.

This scenario was aggravated in mid-2016 because of an even longer off-season — from four to eight months. In other words, fishing was reduced to only four months a year. Besides, a turmoil also ensued in the international market. In Cícero's opinion, experience shows that it is possible to go "from heaven to hell on the very same day," as the price of tuna has varied substantially over the years. This was a challenge for the company's financial planning, which also saw its costs increase in the same period.

Amid all this, another factor had a significant impact on Argo: the emergence of new competitors in the Brazilian tuna market. The new entrants were mostly small-scale fishermen, who had smaller boats and aimed at shoals that could be caught on the sea surface near the coast. In this scenario, the prices of smaller tuna were lower compared to those of larger tuna, which had higher fishing costs. Smaller tuna was sold in large quantities, providing the new entrants with gains of scale and contributing to a cost-based management leadership that ran counter Argo's quality-based differentiation. Eventually, Argo chose to specialize in exporting tuna, as differences in prices were significant in the domestic market.

This period was much more challenging than the previous one: Argo continued to operate in a market with high costs, but had to cope with a shorter fishing period, greater competition in the domestic market, and high price volatility in the foreign market. The financial impacts of these factors were such that the company's operating margin of 34.83% from 2011 to 2015 dropped to 16.20% from 2016 to 2019. These consecutively reduced margins reflected what the Argo manager had already realized: profits had been eroded by sharp revenue declines, which, however, had not been followed by cost and expense reductions.

That was the situation already faced by the company in March 2020, when the first news broke about the measures that the governments around the world, especially in Brazil and in the United States, adopted to contain the COVID-19 pandemic. These included social isolation and constraints in the hospitality industry.

The perfect storm — the pandemic impacts on domestic and international markets

Argo was in a delicate position in March 2020. While it had specialized in exporting tuna, now it found itself at a turning point. A disruption in the demand for tuna, caused by the measures to combat the COVID-19 pandemic, led its main international customer to cancel the purchase of the period.

The company found itself challenged to find alternatives to overcome this crisis. It had already incurred several production costs related to fishing and storing approximately 15 tons of frozen tuna that now had no prospective buyer. Table 1 shows this timeline.

Table 1. Argo's stages.

Period	Operating margin	Fishing period	Competition	Market volatility
Up to 2010	39.32%	12 months	Low	Medium
2011-2020	From 34.83% to 16.20%	4-8 months	High	High
From March 2020	Indeterminate	4 months	High	High

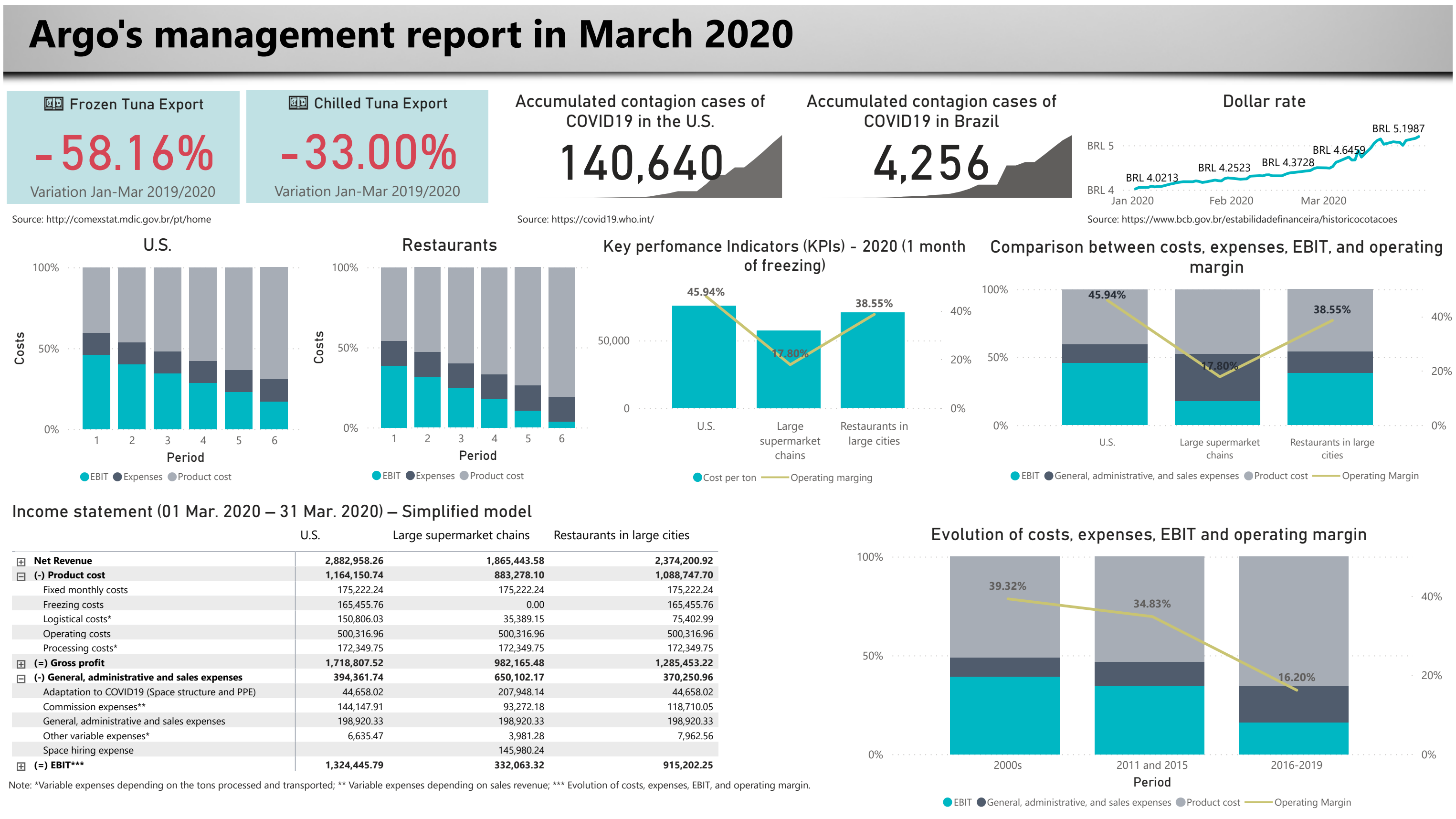
A CALM SEA NEVER MADE A GOOD SAILOR — WHAT PATH TO SECURE THE COMPANY'S FUTURE?

The day after the order was canceled, Cícero set up an emergency meeting that included the company's two main leaders, controller Sebastião de Andrade and treasurer Bárbara Campos. The agenda was clear: what to do to market the tuna fished in March 2020, what costs should be involved in the decisions made, and what risks would be incurred to operate during the COVID-19 pandemic.

Everyone looked at Cícero, who started the meeting. He said, "As everyone knows, we've dealt with challenges that have required a lot of managerial discipline if we're to maintain our company in an increasingly competitive market. An aggravating factor is that now we're dealing with something that's never been seen before, and we need to overcome this new challenge together to guarantee the future of our company and most of its job positions, while also ensuring our employees' health and well-being. We need to decide what to do with the tuna we have. Sebastião, please, present our main management figures."

Sebastião started distributing the management report while explaining his analysis of the company's current situation. "Our company has been going through a history of difficulties that we have managed to overcome thanks to our good cost management. However, we're now faced with a new challenge: the losses and uncertainties caused by the pandemic. With that in mind, we in the controllership, in partnership with the financial team, prepared a management report with the main accounting and macroeconomic information for March 2020 (Figure 1)."

The meeting participants carefully analyzed the management report. All alternatives presented in the report assumed that the company would sell the entire stock of tuna. Then Sebastião continued, "As you can see, the first solution is to keep doing what we've always done: exporting tuna. For this, we must wait for our main customer in the United States to place orders again. In this alternative, we estimate an operating margin of 45.94% based on our KPI. The next solutions involve developing a stronger sales channel in the domestic market. With that in mind, the second alternative is to develop a distribution channel for Brazilian supermarkets. It would produce an estimated operating margin of 17.8%. The third alternative is to increase the sales to restaurants in large Brazilian cities, which would return an operating margin of 38.55%.



Income statement (01 Mar. 2020 – 31 Mar. 2020) – Simplified model

	U.S.	Large supermarket chains	Restaurants in large cities
Net Revenue	**2,882,958.26**	**1,865,443.58**	**2,374,200.92**
(-) Product cost	**1,164,150.74**	**883,278.10**	**1,088,747.70**
Fixed monthly costs	175,222.24	175,222.24	175,222.24
Freezing costs	165,455.76	0.00	165,455.76
Logistical costs*	150,806.03	35,389.15	75,402.99
Operating costs	500,316.96	500,316.96	500,316.96
Processing costs*	172,349.75	172,349.75	172,349.75
(=) Gross profit	**1,718,807.52**	**982,165.48**	**1,285,453.22**
(-) General, administrative and sales expenses	**394,361.74**	**650,102.17**	**370,250.96**
Adaptation to COVID19 (Space structure and PPE)	44,658.02	207,948.14	44,658.02
Commission expenses**	144,147.91	93,272.18	118,710.05
General, administrative and sales expenses	198,920.33	198,920.33	198,920.33
Other variable expenses*	6,635.47	3,981.28	7,962.56
Space hiring expense		145,980.24	
(=) EBIT* **	**1,324,445.79**	**332,063.32**	**915,202.25**

Note: *Variable expenses depending on the tons processed and transported; ** Variable expenses depending on sales revenue; *** Evolution of costs, expenses, EBIT, and operating margin.

Figure 1. Controller's management report.

With the management report in hand, the meeting participants began to discuss possible solutions for marketing the stock of tuna. Cícero pointed out that, having operated in the international market for years, the company was already able to obtain a higher selling price in this market, and therefore it would be interesting to keep this distribution channel open. As presented in the report, the dollar exchange rate had increased from BRL 4.00 in January to over BRL 5.00 in March, which had affected revenues positively. Besides, Argo needed to remain active in that market to be ready to serve it again when it reopens.

In contrast, Bárbara considered that the return of this market depended on external political decisions, and the curve of infected Americans showed an upward trend. The report showed that thousands of people had already been infected by March, but unfortunately, the curve had not reached a plateau yet. Besides, the macroeconomic data in the management report also showed that the exported volume of chilled and frozen tuna had dropped by over 30% and 50% respectively from January-March 2019 to the same period in 2020. Therefore, the longer this market remained closed, the greater the financial influence on the company and even on the quality of the fish, which would have to remain frozen.

Barbara concluded, "If we wait for longer than six months, we may lose everything! Look at the graphs of restaurants and exports to the United States: for every month we wait, the profits from these alternatives decline because of the freezing costs. Besides, exporting to the United States has been the company's strategy since its inception, and we've already experienced substantial cash impacts due to price fluctuations. We're currently having cash problems, so we need alternatives that convert revenues into cash more quickly. The longer the U.S. market remains closed, the greater the likelihood that we'll need external financing. Therefore, moving to the domestic market, particularly through supermarket chains, can be an alternative, with tuna being sold as a premium, differentiated product. On top of that, supermarkets have been ranked as an essential service: they do not close!"

At that moment, Sebastião added, "The restaurant alternative has good margins. That's why we've already contacted the sales sector to intensify our relationship with companies in the hospitality industry located in large state capitals in Brazil. In doing so, we reduce the uncertainties caused by being dependent on the international market, and we wouldn't lose so much in terms of selling price."

Cícero pondered, "The margin decline would be smaller, but the restaurants are still closed... As to supermarkets, we'll probably incur in costs with hiring space, in addition to other necessary expenses, which would make profit substantially lower in this alternative. Besides, we don't have know-how for this. We know that the prices in both domestic alternatives are lower than those in the international market, and we continue to depend on measures adopted by local governments to contain the pandemic."

Sebastião also added an important aspect, "We also have to take into account the risk of COVID-19 infection among our employees. Look, to be sold in supermarkets, the product needs to be sliced and packaged. Currently, we don't do this, which would require having our employees in our facilities for longer times. Our city already experiences several cases of COVID-19, which increases the risk of infection in here."

"This risk is lower if we market tuna to restaurants, either in here in Brazil or in the United States, as this cutting step wouldn't be performed in our facilities," replied Cícero. "This raises my concerns greatly, because we also have to factor in the costs of our vessels that went overboard in March. We still have suppliers to pay. I've worked with them for years..."

Given the above, what would be the relevant costs to ponder before making a decision? How are the company's operating results impacted by the different alternatives? How can the time taken to reopen the hospitality industry impact such a decision? What is the impact of the risk of employee infection on this decision? In short, what is the most suitable solution for the company?

Teaching Notes

ABSTRACT

This teaching case aims to understand how incremental cost analysis can be applied in decision-making. The case portrays a fishing company in the segment that suffered a disruption in demand from the international market as a result of the COVID-19 pandemic. Its managers, who already acted to mitigate previous financial problems, now need to decide how to dispose of fish production during the pandemic. The case encourages the development of analytical competence on the impact of a rupture in demand, the identification of relevant costs for decision-making from an income statement, and managerial decision-making based on incremental cost analyzes. This case, based on interviews and estimated accounting data, was designed for undergraduate and graduate courses focused on costs in the areas of Business and Accounting.

Keywords: cost for decision-making; incremental cost analysis; demand disruption; COVID-19.

RESUMO

Este caso de ensino tem o objetivo de discutir como as análises incrementais de custos podem ser utilizadas como subsídio para a tomada de decisão. O caso retrata uma empresa pesqueira que sofreu uma ruptura na demanda do mercado internacional em decorrência da pandemia da COVID-19. Os gestores, que já agiam para mitigar problemas financeiros anteriores, agora precisavam decidir como escoar a produção de peixes em um cenário de pandemia. A partir desse contexto, o caso incentiva o desenvolvimento da competência analítica dos(as) estudantes ao estimulá-los(as) a refletir sobre o impacto de uma ruptura na demanda, a identificação de custos relevantes para a tomada de decisão a partir de uma demonstração de resultado simplificada e a tomada de decisão gerencial baseada em análises incrementais de custos. Este caso, baseado em entrevistas e dados contábeis aproximados, foi projetado para as disciplinas que envolvam custos em cursos de graduação e pós-graduação (*lato sensu* e *stricto sensu*) nas áreas de Administração e Ciências Contábeis.

Palavras-chave: custos para tomada de decisão; análises incrementais de custos; ruptura na demanda; COVID-19.

Learning objectives and application recommendations

The learning objective of this case is to discuss how incremental cost analysis can support a fishing company's decision-making to overcome the impacts of the COVID-19 pandemic. Despite the several possible approaches to this case, our teaching notes and guiding questions focus on discussing incremental cost analysis. Thus, this material was particularly designed to discuss the impact of the pandemic on (a) the hospitality industry, (b) the identification of relevant costs to support decision-making, and (c) the use and the limits of incremental cost analysis to support managerial decision-making.

We recommend that the teaching notes be used as a starting point. It is possible, and desirable, that this material be adapted to other alternatives for solving the dilemma. Besides, the teacher plays a fundamental role in adjusting the case based on the class profile and the course objectives. We assume that the teacher acts as a moderator by combining technical experiences with academic knowledge to develop solutions for teaching cases (Alberton & Silva, 2018).

Data source

This teaching case is based on interviews with company managers. In compliance with the company's internal policy, we changed its name and those of its employees. However, the editorial team of *Revista de Administração Contemporânea* was provided with the actual information to prove its veracity. The controller assessed the manuscript before its submission, suggesting points for improvement. This increased realism and the adherence of this narrative to the actual case.

Besides, the company's controller assessed the manuscript before its submission. He suggested some improvements, which increased the narrative realism and ensured adherence to the actual case circumstance. We understand that the case should provide an in-depth analysis to support a rich discussion drawing on the information provided by the participants (Chimenti, 2020). However, the company considered that the accounting data contained strategic information and could not be disclosed in the case. Therefore, we changed the numerical data to preserve the company's identity while also adhering to the actual events as much as possible.

Suggested questions for discussion

Different questions can be used to lead the discussion of this teaching case. The teacher is free to take other approaches to explore the case and pose different questions. We propose the following questions as a starting point:

1. Provide a brief context for the current situation of Argo in the pandemic.
2. The company has experienced different stages in its history. How has its history impacted its cost management?
3. What costs are relevant to the managers' decision-making?
4. During the meeting, the Argo's managers came up with possible solutions to market its tuna production. What are the impacts of each of the three alternatives on the company's operating results? Perform an incremental analysis drawing on the costs and revenues of each alternative.
5. In addition to costs, several other factors mentioned in the case could be considered to make a decision. Discuss which factors would be favorable or unfavorable in each scenario.

Lesson planning

The case requires familiarity with the literature on Management Accounting, including incremental cost analysis and sunk cost analysis (Jiambalvo, 2007; Noreen, Brewer, & Garrison, 2011). It particularly serves as a background for discussing cost analysis within Management Accounting. The suggestion is to approach the case in two stages: one independently by the students, and another one in the classroom. The case is expected to require two hours (Table 2).

Table 2. Lesson planning.

Stage (estimated time)	Suggestion
Prior reading of the case (30 minutes)	Students should be advised to read the case in advance. Questions for discussion and the management report can also be made available separately.
Small-group discussion (30 minutes)	Students should gather in 4-5 small groups to answer the questions.
Report of results (45 minutes)	Students are supposed to present and justify their answers. The teacher is supposed to point out the similar results and encourage discussion about divergent results. The use of whiteboard or post-it notes is recommended.
Wrap-up (15 minutes)	The teacher should summarize the topics, concepts, and situations discussed in class.

Case analysis

We suggest the following questions, discussions, and supporting materials to approach the case.

Question 1: Provide a brief context for the current situation of Argo in the pandemic.

Discussion: The international tuna market traded USD 11.56 billion in 2018. Tuna is the sixth most traded fish worldwide, accounting for approximately 9% of the total trade (Food and Agriculture Organization [FAO], 2020). The Brazilian market share accounts for less than 1% of tuna imports or exports, even though the country has advanced 65% in exports from 2016 to 2018 (FAO, 2020). To remain active in the market, Argo incurs high production costs due to the type of fishing it performs. This entails large investments in vessels and differentiated standards for its storage techniques. The company has positioned itself as a supplier in the hospitality industry, particularly providing tuna to American restaurants.

With the advancement of the COVID-19 pandemic, the U.S. government has closed hospitality establishments as a policy of social isolation. This has resulted in a disruption in this product distribution channel, which has affected not only this industry but also the entire production chain. Upon identifying the disruption in restaurant demand, the American importer has canceled all tuna orders. Consequently, Argo has been left with high levels of perishable stock and disruption in its main distribution channel.

Unlike a conventional disruption, the one caused by the pandemic points to uncertainty in reestablishing the distribution channel. This requires a managerial decision as to waiting or not for the international market to reopen. The company's financial health had not been comfortable in the years before the pandemic, which could worsen if it has no cash flow.

In addition, the disruption caused by the pandemic is followed by the risk of employee infection. Developing a distribution channel for supermarkets requires new production steps, such as preparing and packaging tuna, which increases the time spent by the employees on the premises and, consequently, the risk of contagion. The manager is supposed to be aware of the risks of internal contagion, as an outbreak could lead to a partial or total closure of the facilities, in addition to victimizing the employees.

Supporting material: Disruptions are caused by unexpected events that paralyze or reduce the normal flow of production (Craighead, Blackhurst, Rungtusanatham, & Handfield, 2007) with reflections on customers and suppliers (Scheibe & Blackhurst, 2018). In general, these events are limited in nature, occurring in a few industries in the same locality or region (e.g., after an earthquake or hurricane). For companies operating in the international market, this type of disruption affects only part of their customers due to its restricted geographical nature.

However, the COVID-19 pandemic brought a new type of disruption, one with global impacts that has affected industries differently Moritz (2020). Some industries have experienced a significantly increased demand that had an impact on the supply (e.g., the lack of toilet paper in American supermarkets), while others have had their distribution channels interrupted, causing a sharp drop in demand for goods or services. This has been the case for the hospitality industry, the primary purchaser of Argo's fish products.

The lack of planning or prior experiences in pandemics increases the levels of uncertainty amongst managers. It is different from other disruptions, such as earthquakes or hurricanes, which have established protocols and prior experiences reducing the levels of uncertainty about their length or impact (Moritz, 2020). Meanwhile, uncertainties about how the virus spreads and the possible secondary waves of contagion are expected to affect the manager's decision-making. Cícero needs to decide whether the company should wait for the reopening of the international market while he is still unaware of how the disease will spread and how long the restriction measures will apply.

Another factor that distinguishes the current situation from a conventional disruption is the impact on the workforce due to the risk of contagion. In a conventional disruption, the human impact generally is concentrated in a locality that is experiencing the immediate consequence of, say, a natural disaster. In the case of COVID-19, the risk grows over time and is related to the employees' exposure to the virus (Moritz, 2020), which becomes a problem for labor-intensive companies. Thus, adding another productive stage increases the exposure to contagion.

Question 2: The company has experienced different stages in its history. How has its history impacted its cost management?

Discussion: The major stages of the company's history show that it has focused on strategic differentiation-based cost management. This strategy has been based on higher production costs to capture high-quality tuna, which has provided a competitive advantage that has enabled the company to export its product to the United States.

Table 1 shows the major changes in cost behavior, fishing seasonality, competition, and volatility in the international market. This business model has been the company's main management plan despite the environmental and economic changes in its surroundings. The high prices practiced in the international market have been volatile, but more financially attractive than those practiced in the domestic market, which have contributed to increasing this relationship channel.

Problems have emerged when the company was forced to seek new alternatives due to the sudden demand-side disruption caused by the COVID-19 pandemic. As Argo had not aimed at any other additional export competence, it is now vulnerable to any changes in this market. As a future alternative, the company could look for opportunities in the domestic market based on 'premium' products, signaling the superior quality of its tuna to its potential customers. As one of its main features is high quality, an alternative could be charging a higher price than that practiced for conventional tuna.

Supporting material: Strategic cost management is based on reconciling sustainable competitive advantage with cost management (Shank & Govindarajan, 1997). To position themselves strategically, companies have two main alternatives: cost or differentiation leadership (Porter, 1985). Emphasis on one strategy over the other, or on a combination of both, determines how costs will be managed and how the strategy will be implemented: through cost leadership, it will practice lower prices than its competitors; through differentiation leadership, it will seek customer satisfaction by offering a higher quality product (Chenhall & Langfield-Smith, 1998).

Chenhall and Langfield-Smith (1998) warn that the successful implementation of the differentiation-based strategy requires the use of techniques that not only guarantee product quality but also convinces the client of its superiority. Besides, the authors stress that such techniques must be reviewed or updated periodically.

In the Argo case, the strategic positioning is differentiation. Argo's history shows that despite the crisis it has faced in recent years, the company has sustained its business model specialized in high-quality tuna fishing as its main competitive advantage. The company has managed to profit from the international market on two fronts — the prices and the exchange rate, which financially have offset the high production costs.

Argo has been hit by the COVID-19 pandemic because the company had neglected to review or update its management to ensure other sales channels. As a result, the management has overlooked the potentials of the domestic market. One of such potentials could be selling premium products. This product line could be an alternative provided that potential customers are convinced of its superior quality, which would justify its high prices compared to 'conventional' products.

Question 3: What costs are relevant to the managers' decision-making?

Discussion: The report presented by the controller provides several items that could be considered relevant for decision-making. However, its format is more suitable for external disclosure than for managerial decision-making. Reports for external disclosure are usually prepared based on regulations and present information synthetically. As such, they contain both relevant and irrelevant costs, especially sunk costs.

To support decision-making, the report should be reshaped to contain the relevant accounts only, that is, the costs affected by the decision-making in question. For example, the cost related to fishing tuna in March 2020 is not relevant to the decision-making process, since it remains unchanged regardless of the decision made. Similar examples would be the company's monthly expenses and fixed costs. As they do not change because of the manager's decision, potential biases can emerge from the direct use of such reports.

Thus, managers must analyze only the expenses affected by the decision-making on the marketing of tuna in each alternative. In this case, the relevant costs are those that vary according to the volume produced, the distribution channel of choice, or the level of revenue obtained, namely: logistical expenses, processing costs, freezing costs, commission, work adaptation to COVID-19 (restructuring of both space and use of personal protective equipment — PPE), expenses with contracting space, and other variable expenses.

Supporting material: The report presented by the controller contains several characteristics of a report prepared for Financial Accounting purposes, that is, for external users (e.g., investors, creditors). According to the parameters introduced by Atkinson, Kaplan, Matsumura and Young (2011), such reports tend to follow predefined guidelines (based on regulations) to summarize the results of past transactions and decisions. However, reports for Management Accounting purposes may contain retrospective information, but its focus is prospective, aiming to support new decisions and meet the needs of internal users rather than external standards (Atkinson, Kaplan, Matsumura, & Young, 2011).

Noreen, Brewer and Garrison (2011) emphasize the importance of identifying relevant and irrelevant information for managerial purposes in financial reports as ignoring irrelevant information is expected to avoid biases in decision-making. In the Argo case, the cost of tuna fishing operations is a sunk cost irrelevant to the decision-making, regardless of its presence in a traditional report for Financial Accounting purposes and its mention by Cícero at the meeting. As a sunk cost, it has been incurred but cannot be changed by any decision made at the moment or in the future.

Haita-Falah (2017) highlights that this is an irrelevant cost, which has the potential to influence decision-making negatively. Even though they are irrelevant to decision-making, sunk costs end up influencing decision-making processes in general, as shown by empirical studies in different contexts such as Haita-Falah (2017) and Keefer (2019). Warren, Reeve and Fess (2008) explain such phenomena based on psychological aspects, as "admitting an irrecoverable cost is the same as admitting a past mistake" (Warren, Reeve, & Fess, 2008, p. 317).

Question 4: In the meeting, the Argo's managers proposed possible solutions to market its tuna production. What are the impacts of each alternative on the company's operating results? Perform an incremental analysis drawing on the costs and revenues of each alternative.

Discussion: A company's operating result is measured based on information related to its operating activities (income and expenses) while disregarding that related to its financing activities (interest payments, for example). The impact on the operating result, in this case, is given by the difference between the relevant revenues and expenses in each alternative. To this end, these steps must be followed for each alternative: (1) measure the relevant revenues, (2) measure the relevant expenses, and (3) subtract the expenses from the revenues. The relevant expenses and revenues are the basis for the incremental analysis, which emphasizes the effect of each alternative on Argo's operating result. Unsurprisingly, only the revenues and expenses identified in steps 1 and 2 will impact the company's operating result, as the other items do not vary according to the alternative adopted — they are computed previously in its operating result (expenses and fixed monthly costs, for example).

Table 3 proposes an incremental analysis for each alternative (considering a month of tuna freezing in the cases of sale to the United States and to restaurants in major cities). The company's estimated operating result will be directly impacted by the decision made, as both prices and costs vary differently in each alternative. In the case of the American market, a higher price is expected per ton of tuna because of a greater perception of value-added. However, as the American market is closed at the time of decision-making, choosing this scenario implies a freezing cost (with uncertainty about how long the tuna should be frozen). In contrast, marketing to supermarkets reduces uncertainty about the freezing time while entailing a lower price than that practiced in the U.S. market. In turn, restaurants could pay a higher price for tuna than supermarkets, but they do not remove uncertainties about the freezing time.

Table 3. Incremental analysis for each scenario.

	Possible market alternatives		
	U.S. Exports	Large supermarket chains	Restaurants in large cities
Revenue	2,882,958.26	1,865,443.58	2,374,200.92
(-) Incremental costs	684,052.94	658,920.73	584,539.13
Logistical expenses	150,806.03	35,389.15	75,402.99
Processing costs	172,349.75	172,349.75	172,349.75
Freezing costs	165,455.76	—	165,455.76
Commission expenses	144,147.91	93,272.18	118,710.05
Other variable expenses	6,635.47	3,981.28	7,962.56
COVID-19 adaptation (space and PPE)	44,658.02	207,948.14	44,658.02
Space hiring expense	—	145,980.24	—
(=) Results	2,198,905.32	1,206,522.85	1,789,661.79

Supporting material: Decisions involve choices from two or more alternatives (in this case, three alternatives). Noreen et al. (2011) highlight that a manager is supposed to compare the different costs and benefits across the alternatives, which calls for incremental analysis. As Duxbury (2012) points out, this analysis presupposes the manager's economic rationality to figure only the benefits and costs that differ from one alternative to another.

In this case, the benefits are represented by the revenues in each scenario. Jiambalvo (2007) stresses that incremental analysis is carried out by comparing the following in each alternative: (a) the incremental revenue, i.e., additional revenue of one alternative to the detriment of the other, and (b) incremental cost, i.e., additional cost incurred when choosing one alternative over the other. Warren et al. (2008) emphasize that this information is usually not immediately available in traditional accounting records (related to Financial Accounting), so it is necessary to adapt them for management purposes.

Question 5: In addition to costs, several other factors mentioned in the case could be considered to make a decision. Discuss which factors would be favorable or unfavorable in each scenario.

Discussion: The relevant factors in each solution are diverse. Some of them simultaneously benefit some alternatives while harming others. The analysis of these factors is essentially qualitative, and each scenario must be considered to support an adequate decision. Table 4 shows some favorable or unfavorable factors for each alternative, while it is not intended as an exhaustive list.

Table 4. Qualitative assessment of the proposed scenarios.

Scenario	Favorable factors	Unfavorable factors
U.S. exports	Tendency of higher selling price. Prior knowledge of the market. Maintenance of the market, preventing other suppliers from meeting this demand.	Uncertainty about exchange rate variation. Uncertainty about tuna freezing time. Dependence on local political decisions on social isolation in American states.
Restaurants in large cities	Access to a new market. Probably quick conversion of sale into cash.	Tendency of lower sale price. Uncertainties about transactions in a new market.
Large supermarket chains	Access to a new market. Probably quick conversion of sale into cash. A lower level of uncertainty about social isolation measures.	Tendency of lower sale price. Uncertainties about transactions in a new market. Depreciated perception of marketing a premium product. Need for new production stages and, consequently, greater exposure of employees to contagion.

Supporting material: Several factors must be taken into account before making an important decision in a company. Incremental analysis is an important quantitative tool, but it is also an estimate that requires the identification of supporting scenarios. Thus, several qualitative factors must be weighed in the decision-making process. According to Jiambalvo (2007), most important decisions include aspects that are difficult (if not impossible) to quantify. Such qualitative factors should receive the same attention as the quantitative ones involved in incremental analysis.

In the case in point, the COVID-19 pandemic brings a series of important qualitative factors, which range from predicting the behavior of a new virus infection, to which the world population is not immune, to weighing political decisions at different levels (regional, national, and international) and economic implications (in the actual economy, in the financial market, and mitigating policies). An important qualitative factor in the present case is the company's cash needs, which are not directly addressed by the operating result obtained through quantitative analysis, as the company follows the accrual accounting, rather than the cash-basis accounting (Warren et al., 2008). The lack of financial resources to honor commitments in the short term can lead to financial problems and cannot be disregarded in this context.

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APPENDIX A. LIST OF TERMS

Controller — Responsible for coordinating the economic, financial, and asset management processes in medium- and large-sized companies.

Fixed costs — Production factor whose costs are independent of the company's production level, such as rent.

Relevant costs — Costs that must be factored in a given decision-making.

Variable costs — Production factor whose costs are linked to the volume of production, such as direct material.

Simplified income statement — Financial report that details a company's main revenues and expenses in a given period.

Cost structure — Ratio between fixed and variable costs in a given period and level of activity.

Key performance indicator (KPI) — Performance measure aimed to show how effective a company is in achieving an important business objective.

Premium product — Product with high value as perceived by customers, which entails a higher selling price than that practiced for conventional products.

Operating result — Measurement of the company's results, which include information related to its operating activities while disregarding that related to its financing activities (interest payments, for example).

Disruption — Unexpected break in the production flow because of demand-side or supply-side variation.

Fishing seasonality — Fluctuations in the volume of fishery because of annual fish migrations.

Hospitality industry — Also known as the HoReCa market (from the acronym Hotels, Restaurants, and Cafes), it refers to the service structure that meets the demand for tourism, leisure, and events.