



# MEXIS

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## IT SOLUTIONS THAT IMPROVE FMCG PRODUCTS TO OFFSET TAXATION

How nearshoring is increasing the quality of  
products facing additional sugar taxation



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## Technology and the FMCG market: How nearshoring is increasing the quality of products facing additional sugar taxation

Through niche solutions, Nearshore technology companies, like Hexis Technology Hub, have developed high impact projects that uniquely support soft drinks companies in this market transformation.

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### Background: The global state of the soft drinks market

The growing shift in consumer behaviour towards health has greatly impacted the soft drinks industry globally. The two leading market brands, Coca-Cola and its direct competitor, PepsiCo, have both experienced a significant decrease in product sales worldwide, due to the increasing beneficial awareness of low-sugar dietary intake.

These industry giants have seen their market demand steadily dropping year-on-year. In 2016, Coca-Cola product demand dropped by 1%, resulting in their lowest consumption rates per capita since 1985<sup>1</sup>. Similarly, there was a 3.2% decrease in Pepsi-Cola consumption.

Figure 1 shows the soft drink demand for the year 2015 in the United States of America.

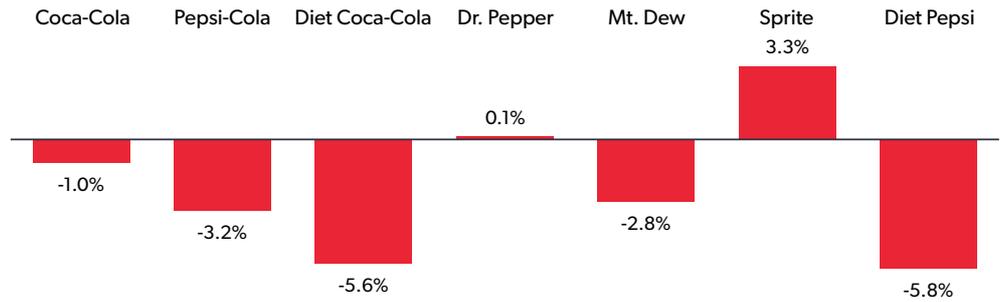


Figure 1 – Soft drink demand in 2015 for USA<sup>1</sup>

Considering that a regular can of 330ml of Coca-Cola contains 35g of sugar<sup>2</sup> which translates into approximately seven teaspoons of sugar, sugary soft drinks are presenting themselves as a national health problem across all age groups in many countries.

## Market updates: Alternative approaches to healthy options

There are also recent growing concerns about the health impacts of sugar replacements, such as aspartame. As a result, “diet” or “zero sugar” products are now following the same market trend as traditional soft drinks. Consumer awareness also exists towards healthier options as stevia, but these still do not have enough market demand and are niche solutions.

## Consequences of sugar taxes for market suppliers in Portugal

Like many other European countries, the Government of Portugal is planning to introduce additional taxes on sugary soft drinks suppliers throughout 2019<sup>3</sup>, an initiative which will most certainly continue in 2020. This will consequently impact the supplier curve and deadweight loss.

In Portugal, the average cost of a 330ml can in retailers is approximately €0.62, as shown in Table 1 below:

Retailers	Price per 330ml can	Price per 1L bottle
Continente	€0.62	€0.97
Jumbo	€0.62	€0.99
Intermarché	€0.63	€1.00
<b>Average price</b>	<b>€0.62</b>	<b>€0.99</b>

Table 1 – Average cost of Coca-Cola 330ml can and 1L bottle<sup>4</sup>

The most consumed drink in Portugal (excluding water, milk, coffee and alcoholic beverages) are Cola drinks, and Coca-Cola is the soft drinks leader with a market share of 28%<sup>5</sup>. Assuming a choke price of €0.99 per can, being replaced after this point by a one-litre bottle, and that the entire client base also consumes cans, the supply and demand curves for Coca-Cola cans can be defined as:

$$\left\{ \begin{array}{l} \text{Demand curve: } P = 0.99 - \frac{(0.62 - 0.99)}{(28 - 0)} \times Q \rightarrow P = 0.99 - 0.0132 \times Q \\ \text{Supply curve: } P = 0.13 + \frac{(0.62 - 0.13)}{(28 - 0)} \times Q \rightarrow P = 0.13 + 0.0175 \times Q \end{array} \right.$$

The diagram in Figure 2 illustrates both curves, where normalisation of 1 to 100 in quantity was performed, using the client market share scale and an assumption that the cost of an aluminium can is € 13c/unit.

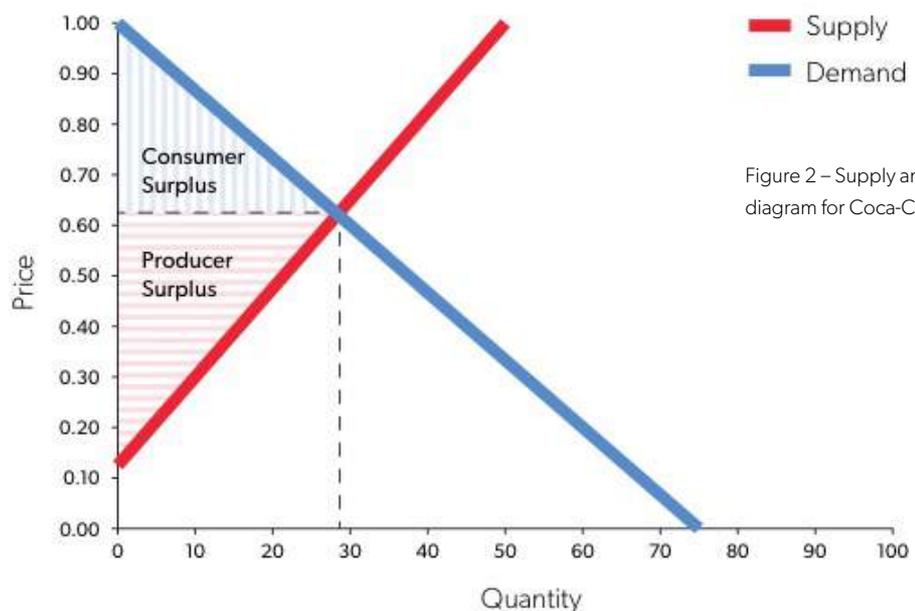


Figure 2 – Supply and Demand diagram for Coca-Cola cans

In the context of the competitive market of soft drinks in Portugal, the incidence of additional taxes on supply will be felt on both sides, where the inelastic side will be the one carrying the most significant effect of this incidence.

In order to determine which side is more inelastic, the following formulae is applied

$$\text{Elasticity} = \frac{1}{\text{slope}} \times \frac{P}{Q}$$

where the **Elasticity of demand** =  $\frac{1}{-0.0132} \times \frac{0.62}{28} = |-1.68| = 1.68$ , and the **Elasticity of supply** =  $\frac{1}{0.0175} \times \frac{0.62}{28} = 1.27$ .

Although both sides will experience the tax incidence, the demand curve is 1.3 times as elastic as the steeper supply curve, and the additional taxation will have a higher incidence on the relative inelastic supply side. The additional taxes to be imposed by the Portuguese government will affect the entire soft drinks market, and this tax is planned to fall under the supply side. In the present case, a change in the supply curve will reduce the quantity supplied at every price, shifting the supply curve to the upper-left, and this effect is called a decrease in supply<sup>6</sup>, as it is shown in Figure 3.

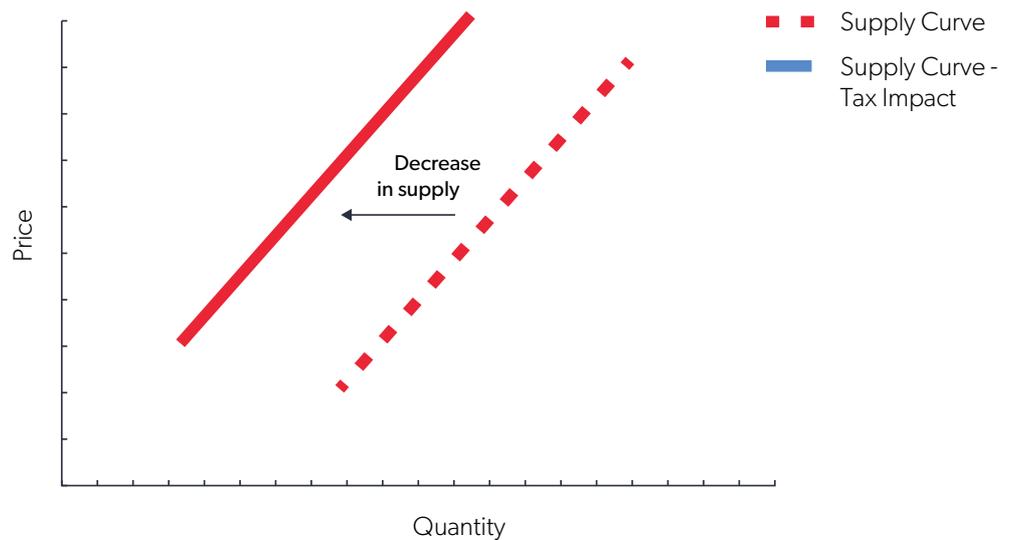


Figure 3 – Shift in the supply curve with a tax impact

## Taxation and the expected decrease in supply

Soft drinks with fewer than 80g of sugar will pay €8.22 per 100 litres<sup>3</sup>, which will translate into an increase of €0.027 per 330ml can of Coca-Cola in the supply side. Considering the expected tax increase, the new supply curve for a Coca-Cola with the new tax incidence will be:

$$\text{Supply curve with tax: } P = 0.16 + 0.0175 \times Q$$

The equilibrium price and quantity will shift as shown in Figure 4, due to the *expected decrease in supply* caused by the tax introduction.

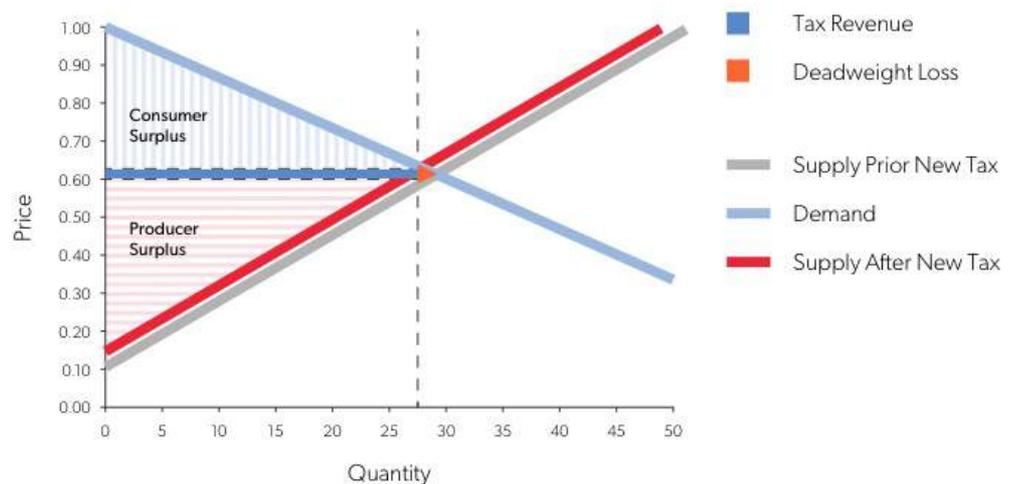


Figure 4 – Supply and Demand diagram for Coca-Cola cans with the new tax

As expected, the impact of the new introduced new tax will shift the supply curve upwards-left into a new quantity and price equilibrium.

In the present scenario for the Coca-Cola can, the tax will reduce the quantity to 27.04, and it will also increase the price to €0.633. This change translates into a decrease of 3.4% in quantity and a 2.1% increase in can price. In the present scenario, the initial effect of VAT and tax in the consumer and producer side is not explored, but in a straight-line of supply and demand if the incidence doubles a tax rate, it also doubles the distortion from the original equilibrium and quadruples the deadweight loss<sup>7</sup>. The continued tax incidence for sugary soft drinks will show a



higher impact on the supply side, where the market share will decrease 0.96pp in an already highly competitive market.

## The intervening power of technology

How can Nearshore services support giants like Coca-Cola and PepsiCo in this market transformation? The answer lies in the credentials and proven experience of a technology partner. Hexis Technology Hub deeply understands the economic situation of this consumer market and is experienced in leveraging technology solutions to create a competitive advantage to its clients.

We have previously used cutting edge technologies like IoT, artificial intelligence and data science and analytics to achieve results in the FMCG sector, that can be easily deployed in the soft drinks industry. Through successfully combining these support strategies we have empowered our clients with unique, measurable insights that have enabled quick adjustment to the market. Investment in these technologies have delivered great financial return, allowing our clients to execute strategies to outperform their competitors.

## The competitive market advantages of nearshoring services: A Hexis use-case

In a recent project, Hexis group was the exclusive technology partner for one of the world's leading FMCG brands. In this challenge, they needed fast innovation to maintain their market stronghold. We delivered value for our client by deploying a solution that provided real-time insights of consumer patterns and supported risk decision analysis. To achieve this, we deployed an IoT sensor, from an exclusive partner, to capture the temperature and volume of a beverage at the pipeline tap. This solution allowed the capture of real-time data, which formed our base foundation. We then developed a layer on top that retrieved all the information from sensors at the tap level of specific selling-points.

The processing of that data generates insights to our client's supply chain and

headquarters (HQ). Figure 5 illustrates the high-level diagram of the solution implemented:

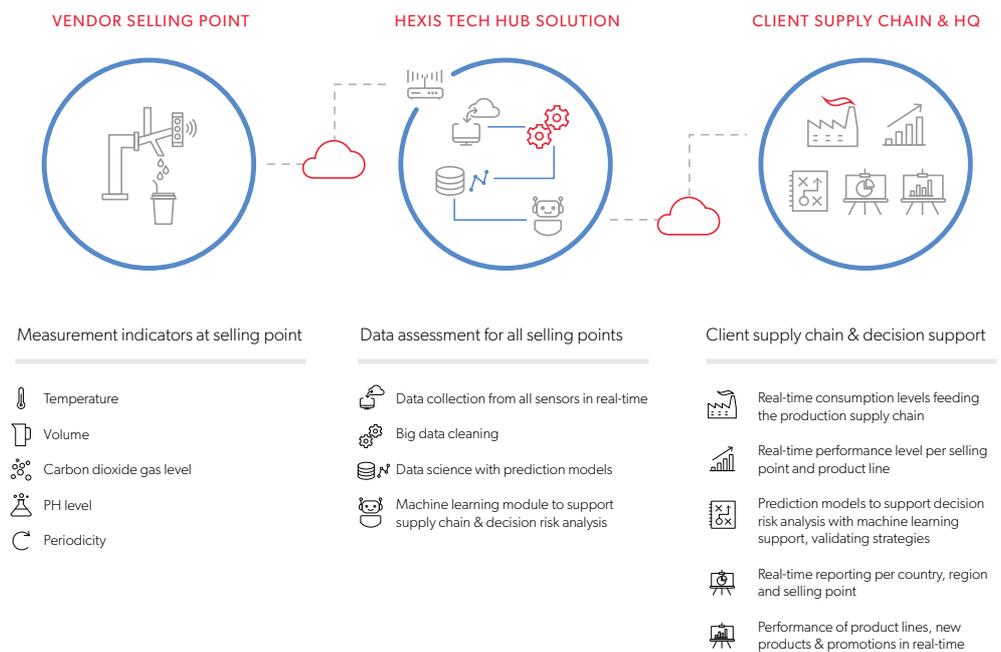


Figure 5 – High-level illustration of the solution implemented

## Insights into Hexis' approach

An IoT sensor was installed to capture and measure five indicators at the tap pipe of the selling point. This allowed a validation of the end-to-end solution, with the possibility for future evolutions with new hardware versions.

This IoT sensor captures the temperature of the liquid at the tap, which combined with the carbon dioxide level and PH level indicators, can be quickly assessed for a specific selling point along the customer journey up to the product consumption. This enabled our client to accurately evaluate their product at the end point. Specifically, our tools allow them to assess if the expected high standards of taste quality and temperature levels are in place. Our volume and periodicity indicators supported market consumption patterns. These indicators combined, fed the data assessment layer developed as part of our end-to-end solution. The scalability of this

solution was designed to have the data entry of thousands of sensors at different selling points. The captured information was then cleansed and structured, allowing an aggregated or granular view up to a selling point. This component allowed data manipulation and a data science layer that implemented predictive models. These fed a machine learning component, where predictions against actual values created security in the end results as shown in Figure 6.

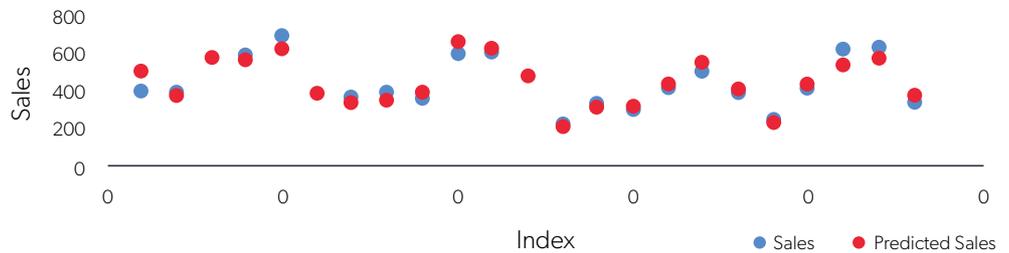


Figure 6 – Index indicator line fit plot

The result created multiple scenarios and predictions in real-time that generated insights into the overall operation, supporting the HQ and supply chain.

These insights were of great value from a country to a region, city or location perspective where the consumption level is measured, alerting the supply chain, which subsequently eliminates production bottlenecks and saves wasted warehouse space. Additionally, the overall quality of our client’s product was recognized by their end-customer, as we helped to optimize the reduced time from production to the consumer. This ensures the correct levels of carbonated water and taste which maintains a high-quality product. Ultimately, our client’s consumer engagement rate has increased at the selling points.

Additionally, we are able to generate real-time reports, allowing the performance of new product lines to be reviewed before quarterly reporting. This has resulted in regular strategy reviews, in shorter cycles with adjusted product lines to the market and consumer behaviour.



In summary, the project timelines, data points and main deliverables comprised the following:

- Team size and project length: 35 consultants for 1-year project
- Roll-out: 1 country, initial roll-out at 14 commercial points and extended to country level
- # Data points: Project was delivered with > 1,000 data points with real-time data collection
- Main achievements:
  - Quality of data inputs
  - Realtime reports
  - Strategy assessment through measurable KPI's (e.g. performance of new product lines, marketing promotions)
  - Supply chain inputs, leading to optimization of bottlenecks and warehouse savings

## State of the art

Other players in the European market have similar IoT devices, that can capture the same data points to generate KPI's that are linked with big data and data science. We have also seen other players that focus on bespoke solutions, missing in the architecture and scalability of the solution.

We at Hexis group designed a solution that not only used an IoT sensor as other players, but also, we were able to create a data layer that generated automatic reporting to the owner of the business shop, up to the regional distributor and supply chain ending at the C-level. Since we are a technology software house, we were able to leverage our technical capabilities and experience to develop more value to our end client.



## Conclusion

The solution implemented by Hexis empowered our client with the digital transformation needed to tackle a traditional market and create competitive advantage. The soft-drink market is inevitably suffering from governmental taxations, which is a trend across matured and developed markets, but can mitigate the impact by leveraging proven solutions already deployed in the FMCG sector. As technology partners, Hexis understands these economic effects and proposes validated technology solutions to deliver a strategic and financial advantage for our clients.

For Coca-Cola and PepsiCo, a retraction of 3.4% in quantity decrease from the consumer side for a volume of 33ml, can be tackled by strategically implementing technology that offers an optimal user experience, which overpasses the associated price increase. Simultaneously, introducing new product lines with a real-time visibility in the customer journey will allow the deployment of strategies that not only creates value to our clients, but also to their end users.

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