

A Work Project, presented as part of the requirements for the Award of a Master's Degree
in Management from the Nova School of Business and Economics

Consulting Project for CUF and Health Cluster Portugal with the topic:

CLOSING THE PORTUGUESE TRADE BALANCE GAP OF MEDICAL PRODUCTS
By Creating A Suppliers' Club And Increasing And Communicating The Portuguese Innovation And
Quality

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Portuguese suppliers should not increase the price charged without changing the product because prices need to comply with strict regulations and buyers have strong bargaining power

ANALYSIS | Exports Hypothesis

| INCREASING PRICE TRANSPARENCY | EUROPE PUBLIC CONTESTS CRITERIA | BUYERS' PRICE SENSITIVITY |
|--|---|--|
| <p>European Union: the “<i>Transparency Directive</i>” (89/105/EEC) “aims to ensure the transparency of measures established by EU countries to control the pricing and reimbursement of medical products”²</p> <p>United States: the Food and Drug Administration (FDA) has created a taskforce to increase transparency. Other legislative efforts to increase price and quality transparency are also being made</p> | <p>Public Contest: in the EU, for big purchases, public buyers need to pre-define technical and price criteria, for products. Then, proposals are evaluated and the most economically favourable suppliers are invited to negotiate</p> <p>Legal Burden on Purchases: under EU Law, in public contests, it is illegal to select a national offer over an economically better foreign offer</p> | <p>Portuguese Undifferentiated Products: a great share of the Portuguese offer includes undifferentiated products, such as disposables</p> <p>Buyers have buying and scrutiny power</p> <p>The buyers of Portuguese products tend to come from richer countries, so, they have the capacity to pay higher prices, but are also more able to scrutinize quality and price evolution</p> |
|  <p>The Portuguese export destinations are implementing regulations to increase price transparency</p> |  <p>Suppliers that increase prices and keep products unchanged are penalized in public contests</p> |  <p>High competition and buyers' regulatory coverage and scrutiny power make price sensitivity high</p> |

KEY TAKEAWAYS

A1

Increase Price Charged with the Same Product



Prices are highly regulated and buyers have significant bargaining power, so, exports will not increase if prices increase without changing the product



KEY TAKEAWAYS

A2

Increase Price Charged with the Same Product but with Higher Quality



If Portugal increases the quality and price of its products, it is possible to increase the value of exports

Portugal should take advantage of its current R&D investments and education, to increase the quality of medical products

ANALYSIS | Exports Hypothesis

Portugal has the **potential to increase the quality of its (already good) products**. Denmark, which has a **high demand for its more expensive and cutting-edge medical products** are proof that there is a demand for quality if Portugal wants to compete in it and raise prices



| |  PORTUGAL |  DENMARK |
|---|--|--|
| Trade Balance ¹ | Deficit: € -2.4 bn (2019) | Surplus: € 3.9 bn (2019) |
| R&D in Health ¹ | 9 th out of 81 countries with 0.17% of GDP | 1 st in 81 countries with 0.93% of GDP |
| Health Expenditure ² | 9.1% of GDP (2018) | 10.5% of GDP (2018) |
| Education ^{3,4} | 5 th in 63 countries regarding Government expenditure on education and Portuguese students performed better than the EU average only in sciences | 2 nd in 63 countries regarding Government expenditure on education and students performed better than EU average in sciences, mathematics, and reading |
| Innovation and Quality ^{3,5} | Portuguese medical products already meet the EU quality standards, but it can be enhanced 32 nd position in the Global Innovation Index | Is the hotspot for world-leading pharmaceuticals , namely Novo Nordisk, and occupies the 8th position in Global Innovation Index |
| Revenues 2019 ² | Pharmaceutical Products Manufacturing : ~€1.2bn | Pharmaceutical Products Manufacturing : ~€14.3bn |
| Average Export Price per Tonne ¹ | Medicines (Therapeutic and Prophylactic use): ~€227 Instruments (Medical and Surgical use): ~€385 | Medicines (Therapeutic and Prophylactic use): ~€2 543 Instruments (Medical and Surgical use): ~€1 206 |

Table 16: Portugal vs Denmark

Sources: Team Analysis; ¹ OCDE - Comext; ² Statista; ³ IMD study; ⁴ PISA (OECD); ⁵ In-depth interviews



KEY TAKEAWAYS

A3

Increase Price Charged
by Increasing the
Product Mix Diversity



The optimal solution may
lie in increasing the
diversity of the product
mix, since it is proved to
increase companies'
profitability

Increasing the diversity of the product mix has proven to be an appropriate solution to increase companies' profitability levels

ANALYSIS | Exports Hypothesis

Portuguese suppliers offer a wide **variety of high-quality medical products**, recognized internationally. **Bastos e Viegas and ADA are 2 of the main players with different market approaches**: while Bastos e Viegas offers a wide range of products, ADA focuses on a market niche

BASTOS E VIEGAS

Main Portuguese **manufacturer of non-active medical devices**, selling to **more than 90 countries** around the world:

- **Product Categories**: 14 different products' categories ¹
- **Production Process**: accounts for **several production lines**, **vertically integrated**

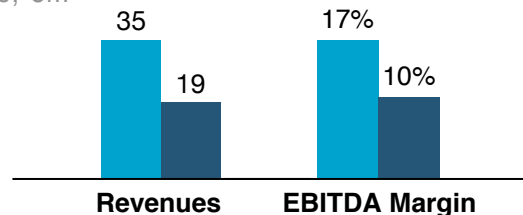
ALBINO DIAS DE ANDRADE (ADA)

A conglomerate of 3 companies in the **cotton textile transformation sector**, producing medical and surgical material:

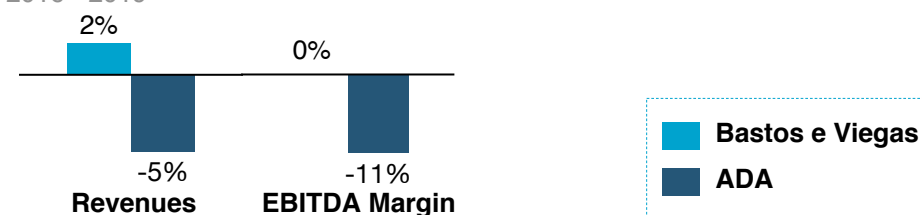
- **Product Categories**: 3 (compresses, diapers, and bandages) ¹
- **Production Process**: **vertically integrated**, through three segments/units of the company

BASTOS E VIEGAS vs ADA

Graph 26: Revenues and Margin

2019, €m²

Graph 27: Revenues and EBITDA Growth

CAGR 2016 - 2019²

- **Revenues and EBITDA Margin**: in 2019, Bastos e Viegas' revenues and EBITDA margin were higher than ADA's
- **Growth**: since 2016, Bastos e Viegas revenues increased at 2% CAGR and ADA's revenues and EBITDA margin have been decreasing



KEY TAKEAWAYS

A6

Increase the Quantity Offered by Increasing the Efficiency of Suppliers

Portuguese suppliers' efficiency can be enhanced, in particular in what concerns inventory turnover and sales per employee, to offer larger production quantities

ANALYSIS | Exports Hypothesis

2 Portuguese companies from each industry were compared to their respective **industry's performance***, according to the following indicators:

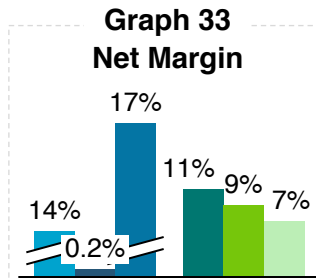
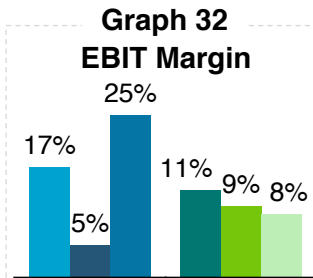
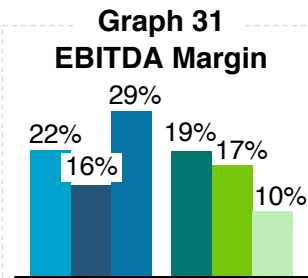
Profit Margins: extent to which companies are able to make money

Asset Turnover: companies' ability to efficiently use their assets to generate sales

Inventory Turnover: how fast companies sell their inventories

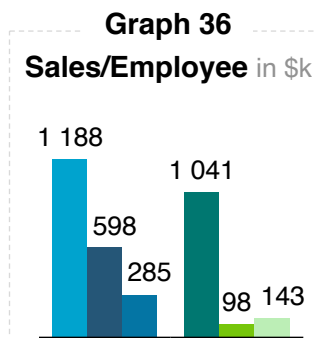
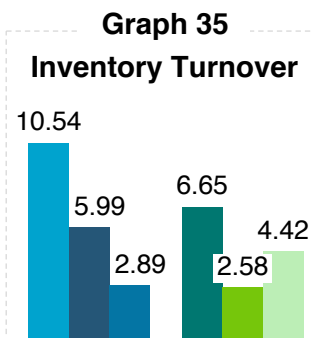
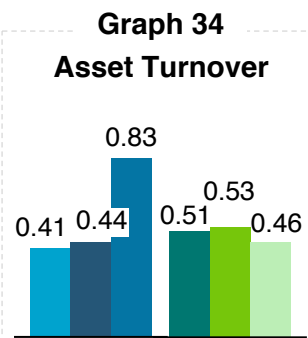
Sales per Employee: efficiency and productivity of the average employee, in each company

Profitability 2019 1,2,3



- **Pharmaceuticals:** while Hikma's profitability is above the average industry profitability, Bial's profitability is significantly below
- **Medical and Surgical Material:** both Portuguese companies' profitability, specially ADA's, are below industry levels

Efficiency 2019 1,2,3



- **Asset Turnover:** Hikma uses assets more efficiently than the industry, while others do not
- **Inventory Turnover:** the companies are below industry levels
- **Sales per Employee:** in Portugal, sales per employee are significantly below industry levels

Pharmaceutical Industry* Bial Hikma Medical and Surgical Material Industry* Bastos e Viegas Albino Dias e Andrade (ADA)



The efficiency of Portuguese producers can be improved, so that companies can be able to produce larger quantities

In order to increase innovation and quality of its medical products, Portugal should develop incentives, establish partnerships with universities and communicate its quality, to increase the value of exports



RECOMMENDATION 3 | Increase and Communicate Innovation and Quality of Portuguese Offer (1/6)




| RATIONALE | OBJECTIVE | DESCRIPTION |
|---|--|--|
| <p>Portugal has the capabilities to increase the quality of medical products and there is a demand for higher quality products. Moreover, it has been proven that increasing the diversity of Portuguese products, through innovation, increases the company's profitability</p> | <p>Increase the value of exports, by increasing the price charged from Portuguese medical products suppliers. It can be achieved by improving their quality and diversifying the product mix</p> | <p>Increase Portuguese innovation and quality of the with:</p> <ol style="list-style-type: none"> 1. Government and European incentives 2. Partnerships with universities and young talent attraction incentives 3. Communication of Portuguese medical products quality |
| <p> 1 Development of Government and European incentives</p> <p>Government fiscal incentives and grants: promotion of fiscal incentives to Portuguese research centres to fund health R&D projects</p> <p>Government contests: promotion of annual monetary awards to innovative Portuguese health companies</p> <p>European non-repayable funds: attraction of non-repayable health R&D funding from foreign investors</p> <p>International innovative fairs: participation in International fairs</p> | <p> 2 Establishment of partnerships with universities</p> <p>University contests: promotion and participation in innovative contests, in collaboration with universities, companies, and research centres</p> <p>“Attract Young Talent” program: development of national strategies to increase talent attraction, based on best practices</p> | <p> 3 Communication of Portuguese medical Products' quality</p> <p>Portuguese suppliers' platform: for national medical products' suppliers to present their product catalogue with its specific features and certifications:</p> <ol style="list-style-type: none"> 1. Portuguese quality ranking: quantifies the credibility of quality certifications 2. Feedback form: monitors buyers' satisfaction to continually improve the product's quality 3. Annual rewards to suppliers: incentivizes quality competitiveness among Portuguese suppliers |

Table 43: Recommendation 3 – Sub-recommendations Description

More incentives provided by the government and European organizations should be developed, to retain and attract research centres to Portugal and stimulate the production



RECOMMENDATION 3 | Increase and Communicate Innovation and Quality of Portuguese Offer (2/6)

1 | Development of Government and European Incentives

Objective: increase the number of **incentives** currently existing in Portugal and Europe by:

(1) **retaining research centres** in Portugal, (2) **attracting research centres** to Portugal, and (3) **incentivizing research centres** to produce and discover solutions for innovative and disruptive medical products

| MEASURE DESCRIPTION AND OBJECTIVE | ALREADY IN PLACE ^{1,2,3} | IMPACT | | |
|--|---|--------|---------|-------------|
| | | Retain | Attract | Incentivize |
| Government fiscal incentives: attenuate tax burden from Portuguese scientific investments | Tax incentive: SIFDIE (Portuguese Tax Incentive System for R&D Business) | ✓ | ✓ | ✓ |
| Government contests to innovative companies: support Portuguese scientific community with monetary awards | Contest in Portugal: Born from knowledge Awards | ✓ | ✓ | ✓ |
| Government grants: stimulate scientific investigation in Portuguese research centers | Grant: government grant for R&D projects funded by FCT | ✓ | ✗ | ✓ |
| European non-repayment funds: cover part of the R&D initial costs of Portuguese research centers | European funding program: horizon 2020 Innovation and Investigation | ✓ | ✓ | ✓ |
| International fairs: increase visibility and credibility of Portuguese research centres to receive funds | Presence in German Contest: Techtextil Innovations Awards | ✓ | ✓ | ✓ |

Table 44: European and Government Incentives

To address the “brain drain” effect, the Portuguese government should develop a talent hosting plan, that will have as the main goal of attracting young talented scientists to work in Portugal



RECOMMENDATION 3 | Increase and Communicate Innovation and Quality of Portuguese Offer (3/6)

2 | Establishment of Partnerships with Universities

BRAIN DRAIN PROBLEM



In 2018, Portugal was in the **top 5** European countries with the **highest proportion of emigrants** searching for **better job opportunities** ¹

SOLUTION

Attract international young talent (“brain gain”)



Portugal should replicate the strategy adopted by San Sebastian: create a hosting plan for international researchers

BEST PRACTICES | Spain (San Sebastian) *

- **Strategy:** Development of a **talent hosting plan** in a strategic region (San Sebastian - hub of R&D) for a **talent attraction plan** focused on international researchers to work in collaboration with local researchers
- **Implementation:** The country invested in **talent house building**, where researchers can rent houses and research facilities at affordable prices, have access to a “**welcome service**” that facilitates the researchers’ integration and to a **seek-job guidance service**
- **How are they attracting young talents?** (1) Providing 25 young scientists **mobility grants** of €1358/month, for them to develop a research project in talent house facilities and (2) Offering the possibility for young talents to **move into the talent house** facilities for 2 months, to collaborate with Talent House’s researchers
- **Results: Increased** San Sebastian's **R&D investment** and attracted **~1320 international researchers**

PORTUGAL SITUATION

- **Where to establish?** **North of Portugal**, close to i3S ¹ (R&D hub) which will facilitate the network between health researchers, companies, and universities
- **How it should be funded?** With the help of the **Portuguese Government**



Figure 12: San Seb. Talent House

To increase medical product's innovation, Portugal should use currently available platforms that connect students and research centres, in order to find disruptive solutions



RECOMMENDATION 3 | Increase and Communicate Innovation and Quality of Portuguese Offer (4/6)

2 | Establishment of Partnerships with Universities

Description: incentivize the use of currently available platforms among universities such as **H-Innova Health Innovation Hub**



Objective: promote a collaborative business environment between **universities, research centres and companies** to develop innovative products and increase prices

ADVANTAGES FOR EACH STAKEHOLDER

- **Students:** Investigate Innovate Ideas: (1) apply theoretical knowledge into practice; (2) 1st award price of 5000€
- **Research Centres:** Create patents: (1) access to a low-cost and highly-qualified workforce; (2) access to “fresh minds” to investigate new ideas
- **Producers:** Produce new products: (1) create innovative products through the payment of royalties, that increase profitability levels

| Universities To Collaborate w/ | University | Possible courses to collaborate | University Ranking ¹ | Research Centres To Collaborate w/ | Company ² | Company's facilities | |
|--------------------------------|-----------------------------|---|---------------------------------|------------------------------------|--|----------------------|------------|
| | | | | | | R&D | Laboratory |
| | Universidade Católica | Biotechnology and Innovation | 301-400th | | Chamalimaud Foundation | ✓ | ✗ |
| | Universidade do Porto | Biomedical Engineering | 401-500th | | Biological Experimental Tech. Institute (iBet) | ✓ | ✗ |
| | Universidade de Lisboa | Chemical Engineering | 501-600th | | Biomedical Engineering Institute (INEB) | ✓ | ✓ |
| | Universidade de Aveiro | Biomedical Materials and Devices; Chemistry | 601- 800th | | Ricardo Jorge Nacional Institute | ✓ | ✓ |
| | Universidade Nova de Lisboa | Biochemistry for Health | 601- 800th | | Pedro Nunes Institute | ✓ | ✓ |
| | Universidade do Minho | Medicinal Chemistry; Textile Chemistry | 601-800th | | Innovation Pole in Polymer Engineering (PIEP) | ✓ | ✓ |
| | | | | | Technological Center of Textiles Portugal (Citeve) | ✓ | ✗ |

Table 45: Possible Universities to Collaborate With

Table 46: Possible Research Centres to Collaborate With

The quality of Portuguese medical products should be communicated through a single online platform which aggregates all Portuguese suppliers that meet the quality requirements



RECOMMENDATION 3 | Increase and Communicate Innovation and Quality of Portuguese Offer (5/6)

3 | Communication of Portuguese Medical Products' Quality




| POOR COMMUNICATION | SOLUTION | ONLINE PLATFORM Features and Objectives | |
|---|---|--|--|
| <p>High Quality ¹</p> <p>Portugal has potential to increase the quality of its (already good) medical products</p> | <p>Improve the communication of the Portuguese quality and incentivize higher quality levels</p> | DESCRIPTION | OBJECTIVES |
| <p>but...</p> | <p>Online Platform Included Features</p> <ul style="list-style-type: none"> • Supplier's Profile • Quality Ranking • Feedback | <p> Suppliers' Profile</p> | <ul style="list-style-type: none"> • Suppliers' name • Contact information: address, website, telephone and e-mail • Catalogue of products <p>Increase the Portuguese medical suppliers' quality visibility using a single platform to expose a clear profile description of each supplier</p> |
| <p>It Is Unperceived</p> <p>Portugal should enhance the perceived quality of its medical products</p> | | <p> Quality Certifications Ranking</p> | <ul style="list-style-type: none"> • Step 1: attribute national and international quality certifications to each supplier in the platform • Step 2: rank the suppliers based on the quality certifications' credibility <p>Increase the quality level of Portuguese offer by rewarding suppliers annually, according to their rank placement, to foster competition between medical suppliers</p> |
| | | <p> Feedback Form</p> | <ul style="list-style-type: none"> • Mandatory fulfilment of feedback form regarding purchase satisfaction, together with a classification attribution • Increase the efficiency of meeting client's quality requirements • Help buyers choosing the best alternative based on the platform's reviews and classifications |

Table 47: Online Platform Overview

The action plan to increase and communicate the innovation and quality of Portuguese offer will take between 1 year to 4 years to implement



RECOMMENDATION 3 | Increase and Communicate Innovation and Quality of Portuguese Offer (6/6)

COSTS AND ACTION PLAN

| Nr | Tasks | Start Date | 2021 | | | | 2022 | | | | 2023 | | | | 2024 | | | |
|----------|--|----------------|-------------------|----|----|----|-------------------|----|----|----|------|----|----|----|-------------------|----|----|----|
| | | | Q1 | Q2 | Q3 | Q4 | Q1 | Q2 | Q3 | Q4 | Q1 | Q2 | Q3 | Q4 | Q1 | Q2 | Q3 | Q4 |
| 1 | Development of Government incentives | Q1'2021 | [Action Plan Bar] | | | | | | | | | | | | | | | |
| 1.1 | Increase awareness for Portugal's incentives necessity | Q1'2021 | [Action Plan Bar] | | | | | | | | | | | | | | | |
| 1.2 | Development of Government and European incentives | Q3'2022 | | | | | [Action Plan Bar] | | | | | | | | | | | |
| 2 | Establishment of partnerships with universities | Q1'2021 | [Action Plan Bar] | | | | | | | | | | | | | | | |
| 2.1. | Promotion of innovative contests among interested participants | Q1'2021 | [Action Plan Bar] | | | | | | | | | | | | | | | |
| 2.2. | Introduction of "Talent House" plan to interested stakeholders | Q2'2021 | | | | | [Action Plan Bar] | | | | | | | | | | | |
| 2.3. | Construction of "Talent House" Facilities | Q1'2022 | | | | | [Action Plan Bar] | | | | | | | | | | | |
| 2.4. | Accommodation of first foreign investors | Q3'2024 | | | | | | | | | | | | | [Action Plan Bar] | | | |
| 3 | Communication of Portuguese medical products' quality | Q1'2021 | [Action Plan Bar] | | | | | | | | | | | | | | | |
| 3.1 | Design medical products suppliers platform | Q1'2021 | [Action Plan Bar] | | | | | | | | | | | | | | | |
| 3.2 | Introduction of the platform to medical products' buyers | Q3'2022 | | | | | [Action Plan Bar] | | | | | | | | | | | |

Table 48: Recommendation 3 Action Plan



APPENDIX

Vera Gomes Leal

European countries are adopting successful strategies to attenuate the “brain drain” effect by attracting talent to increase the quality of its medical products and to find innovative solutions in the medical sector



APPENDIX E8 | Recommendation 3 | Best Practices




| Project |  Greece and Bulgaria |  Czech Republic (South Moravia) |  Spain (San Sebastian) |
|-------------|---|--|--|
| Description | Collaboration between universities and companies | Fostering the quality of its scientific research | Attract international researchers (R&D hub) |
| Timeline | 2013 - 2015 | 2009 - 2020 | 2011 - 2020 |
| Procedures | <p>Online Job Platform</p> <ul style="list-style-type: none"> Local SMEs and research centres benefit from the expertise of highly qualified researchers Local researchers benefit from having access to local universities and companies to conduct scientific investigations | <p>Somopro Grant</p> <ul style="list-style-type: none"> The Government provides grants to researchers working in South Moravia, which includes: (1) living allowance, (2) mobility allowance and (3) travel allowance | <p>Hosting Plan: Talent house facilities</p> <ul style="list-style-type: none"> Exclusively built for talented researchers at affordable prices “Welcome Service” to facilitate integration “Seek-job Guidance Service” |
| Results | <ul style="list-style-type: none"> In 2015, more than 1700 qualified candidates applied for jobs using the platform Since 2009, the number of people leaving Chemnitz looking for job opportunities decreased | <ul style="list-style-type: none"> 13 out of 27 foreign researchers using this programme remained in the country 71 researches were conducted from 71 countries | <ul style="list-style-type: none"> Since 2011, it has attracted 1325 young researchers Increased region’s investment in R&D as % of GDP |

Table 65: Recommendation 3 Best Practices