

MARKET ANALYSIS OF FOREIGN AND **IRISH INDUSTRY FOR BUSINESS** **OPPORTUNITIES**

Financial and Business Analytics



Introduction to Tableau

Today every company is a data company, there are more people than ever before that need to have access to data to make a better and faster decision. That means every person is data person and tableau is the tool that helps people to see and understand data easily. Tableau can be used by people working in marketing, production, research, information technology, civil etc in all sorts of major domains where there is a huge amount of historic and continuous generation of data. Recent survey agreed that all the companies are working toward achieving data-driven culture for optimum growth. Considering the main aim behind visualization is to grow the topline of the business, to improve customer experience and to get rid of unnecessary costs and inefficiencies. Tableau is a highly interactive solution for business intelligence. It is designed for people who don't have coding skills. With Tableau, anyone can visualize and understand data without the need for advanced skills in data science. It is a data visualization tool that saw the third-largest surge in demand.

Introduction to Data Story Telling

The primary job of humans is to communicate. Study says that humans spend 70-80 per cent of the working hours communicating regardless of the type of job. There was a survey among 400 recruiters of college graduates saying that the highest-ranked of all desired skills was communication. Telling a story with the available data is particularly important for knowing the unknowing outcomes. Jennifer Aaker a marketing professor of Stamford university shared a remarkably interesting fact about data storytelling, stating that "A story is 22 times more memorable than the facts alone."

Data storytelling is a structured approach for communicating data insights and it involves a combination of three elements: data, visuals and narratives. When visuals are applied to the data, they can enlighten the audience to insights that they wouldn't see without charts or graphs. Helping them to narrate the whole picture which is not possible by just seeing the huge datasets.

Data Story name: Annual Business Survey of Economic Impact

The Department of Business, Enterprise and Innovation published Annual Survey of Economic Impact providing data on all Irish-owned and foreign-owned client firms of the enterprise agencies from the year 2000-2017. The report provides aggregated estimates for all Irish-owned and foreign-owned client firms of the enterprise agencies across a range of variables e.g. sales, exports, purchases of material and services, payroll, direct Irish economy expenditure, value-added, etc. Which can be useful in evaluating several markets and its demand and cost to do business. Also, we have included the reports available from www.cso.ie regarding the agri-food export used in the latter half of the report

Source of dataset

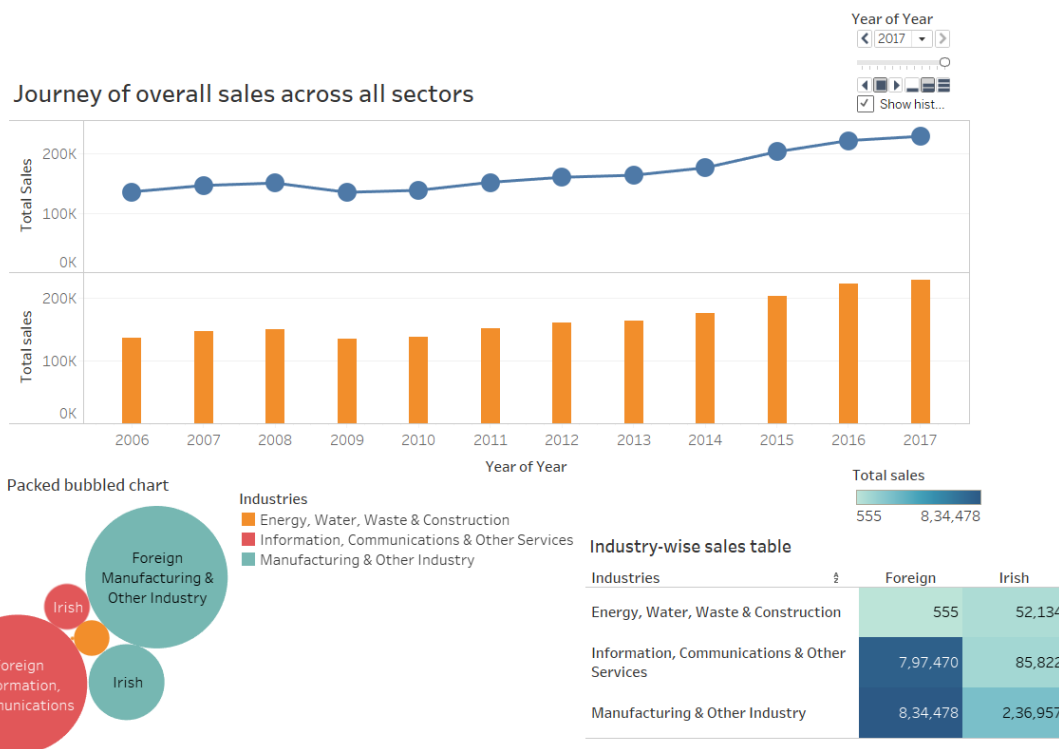
Data.gov.ie: <https://data.gov.ie/dataset/annual-employment-survey-2015>

Data.gov.ie: <https://data.gov.ie/dataset/annual-business-survey-of-economic-impact-absei>

cso.ie: <https://www.cso.ie/en/statistics/agriculture/censusofagriculture2010/>

cso.ie: <https://www.agriculture.gov.ie/media/migration/publications/2018/>

Dashboard 1: Journey of sales across all Industries (Energy, water, waste, Information, Communication, Manufacturing and other industry)

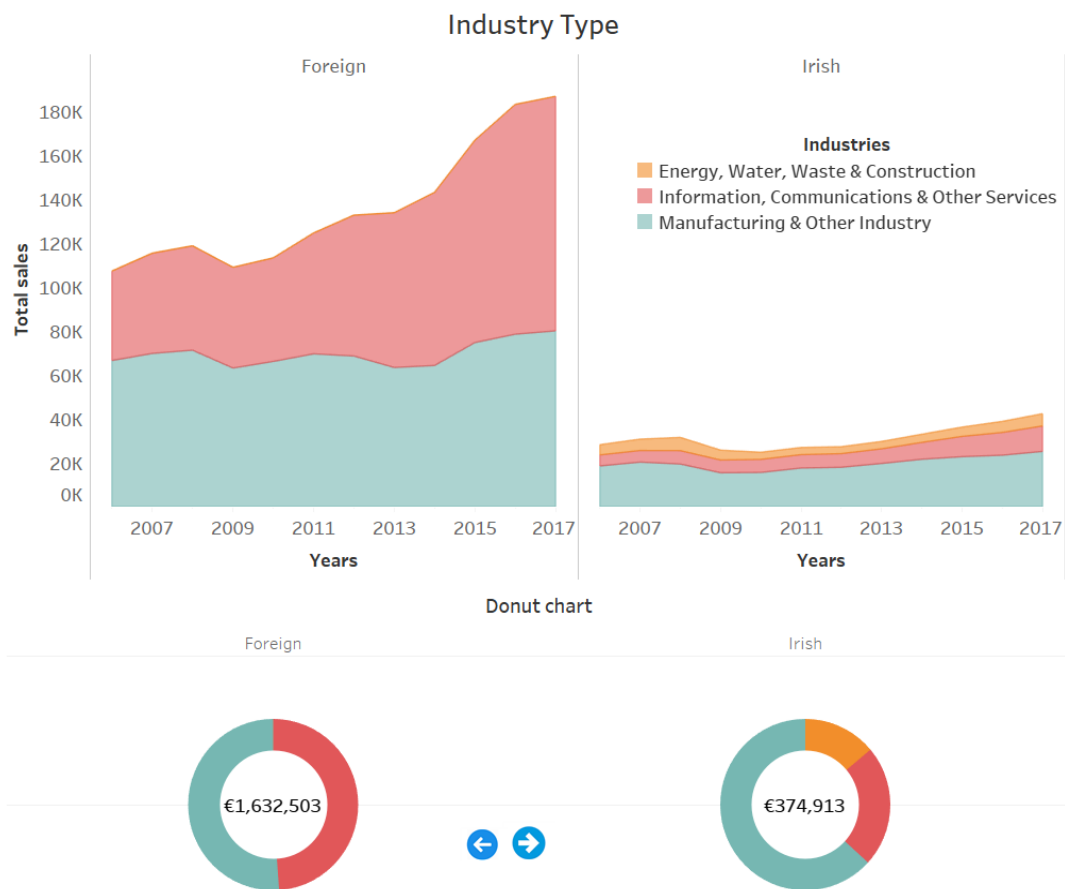


In the above dashboard 1 screenshot, we have included an animated line-bar chart to visualize the sales of all industries from the year 2006-2017. We can see a progressive line graph of sales throughout all years except 2009, but the sales are at its peak in the year 2017. To drill down deeper and find out sales contribution in each sector we tried to visualize data using packed bubbled chart. In the packed bubbled chart we found that the total sales across foreign-owned Manufacturing industries are higher than all Irish owned industries except Energy, Water, Waste & Construction, but it's expected because as we see the data, the counts of the Irish owned industries is less compared to foreign industries.

Similarly, Industry-wise sales table is very informative as it not only gives the numerical representation of total sales grouped by industry type but also highlights cells which have highest sale (label included in the dashboard with colors determine the highest and lowest sales) Information, Communication and Manufacturing industries contributes the highest sales compared to Irish owned industries.

To seek any business opportunities across Ireland from the mentioned industries we are now trying to drill down and analyze Irish manufacturing Industries.

Dashboard 2: Industry Type



Above dashboard 2 screenshot combines area graph and donut chart to explain information regarding the sales contribution of Irish and foreign-owned industry.

Area graph is plotted against years and total sales of all the industries, while the colored area in it explains the industry type i.e. (Energy, Information, communication, Manufacturing). The total sales of the foreign-owned Manufacturing industry are almost stagnant until 2015. Similarly, a steady increase in sales is accounted for all the Irish owned Industry from 2007-2017.

Contribution of sales is almost negligible for Energy, water, waste and Construction industries for both Irish and foreign-owned industries.

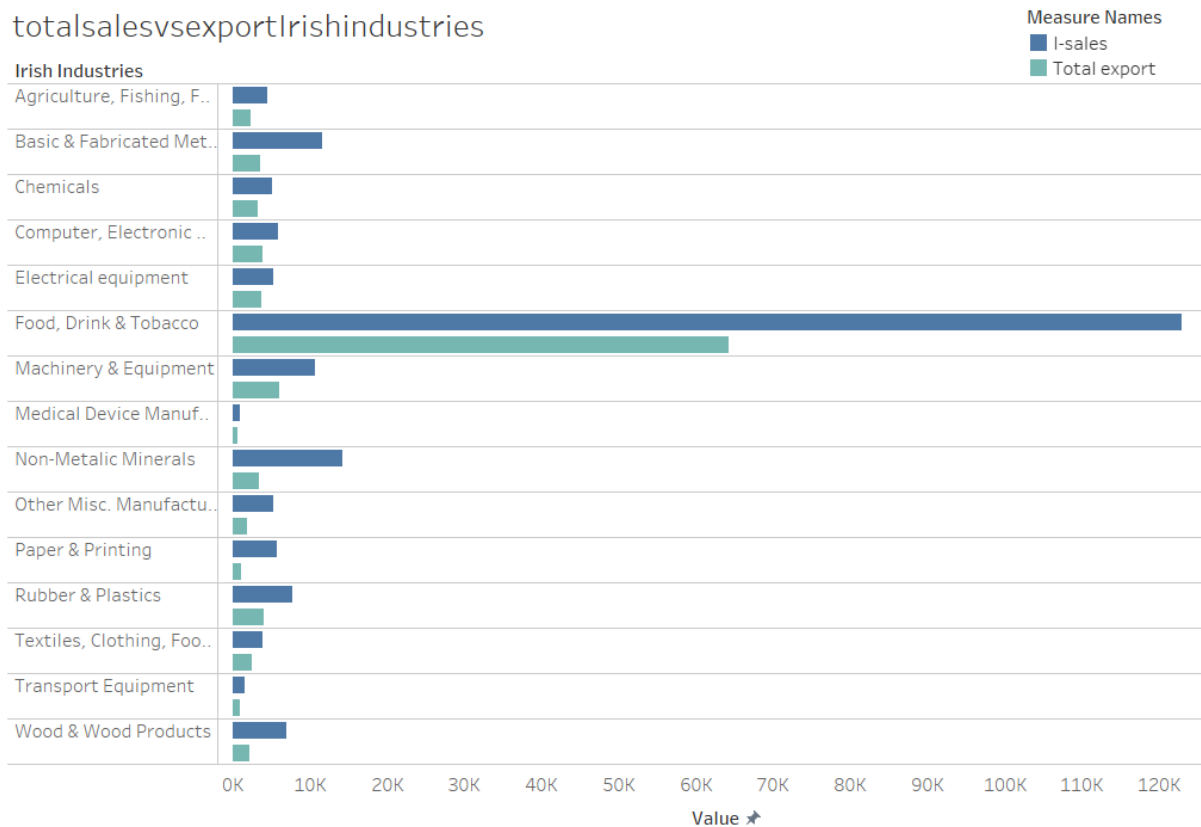
Additionally, the doughnut chat calculates the total sales of both Irish and foreign-owned industry. Sales of 1,632,503 euro and 374,913 euro are recorded for foreign and Irish industry respectively.

In order to understand the total sales in more detail concerning the total number of employees, payroll and profit we have drilled down it deeper and only focused on Irish owned industry.

Dashboard 3: Total sales vs Export for Irish Industries

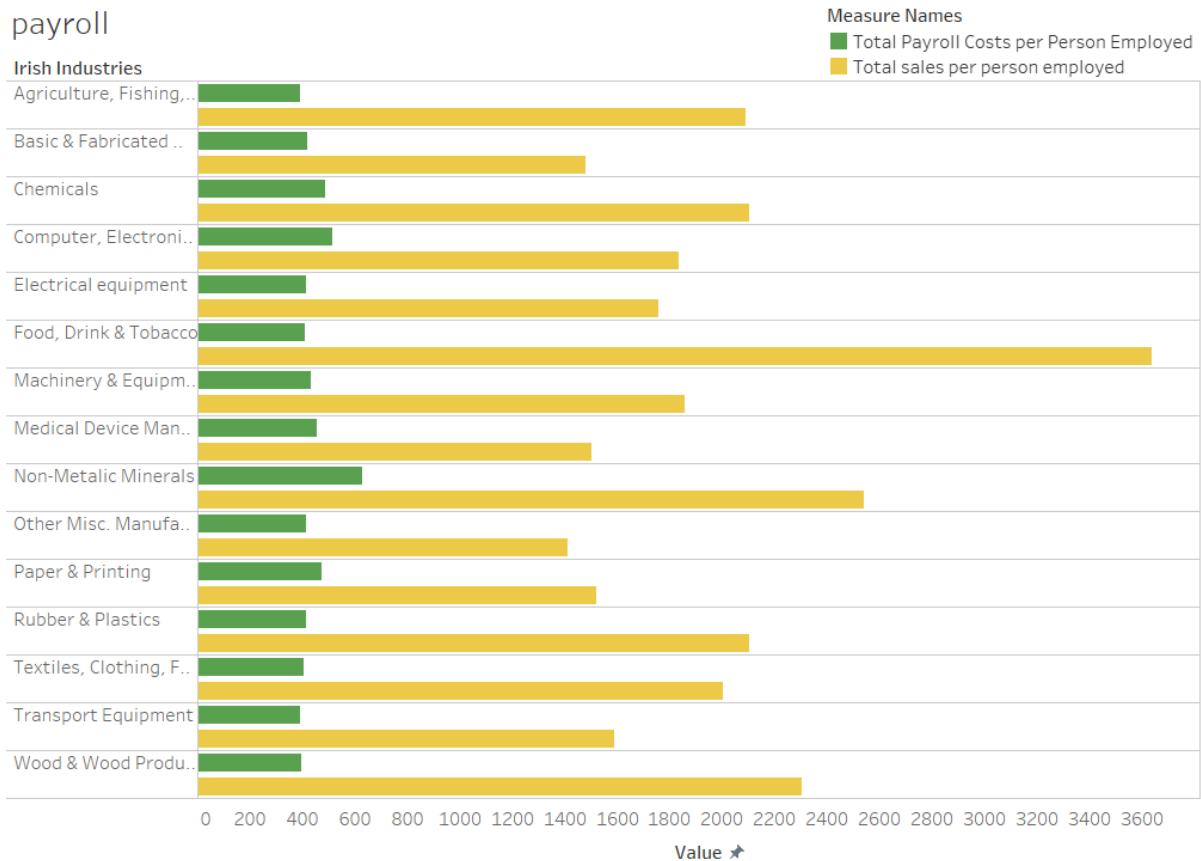
To do deeper analysis about the various market we decided to visualize the data which includes information of several Irish industries and it's sales along with the scale at which it is exported from the total sale. So, to know the global demand and local demand of the several goods manufactured by Irish Industries. Using this data, we could find which industries are already in demand and where there is a shortage in numbers of sales. So, further analysis can be done for which market to focus on business opportunities.

totalsalesvsexportIrishindustries



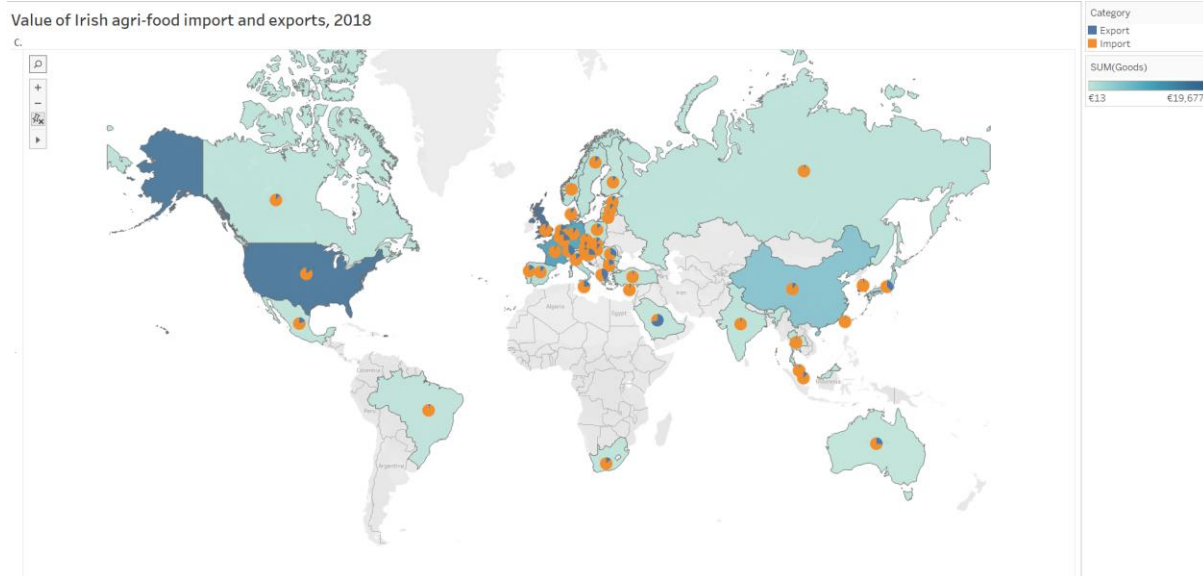
With the help of a horizontal bar chart, we have included 15 Irish industries data together in a single chart. Instead of showing a separate graph for each industry. The x-axis indicates the value which is used to measure the amount of sale from 0 to 120,000. In this, we can easily identify that food, drinks and tobacco industry has the highest sale and export sale contribution. This helps us to identify how much value of goods is being exported and how much consumed locally. This also helps in identifying which industries will have more demand for the foreign market and for which industries we should focus more. We can see for basic and fabricated metal products, non-metallic minerals and wood products industries contributed less than half of its goods exports. Similarly, it also indicates that Transport Equipment, Medical Device Manufacturing, has the least sale hence leading to less export sale too. This also shows potential opportunity for all other industries apart from food drinks and tobacco industry and shows that food drinks and the tobacco industry have a huge market in Ireland as well as abroad.

Dashboard 4: Payroll of employees in Irish Industries



Above graph shows the comparison for Return of Investment of each industry based on employee payroll. So, it can be easily identified which industry will require more budget and funding. From the figure, it can be noticed that food, drink and Tobacco industry has more sales along with fewer payroll costs per person employed. We could see each industry have the same basic pay however return of investment is more. If we compare Dashboard 4 with the insights of Dashboard 3 it can be justified that Food, Drink and Tobacco have great demand in the local and international market. However, we can also see that Basic and Fabricated metal products, Machinery and Equipment, Non-Metallic Minerals have better numbers with less payroll or equal payroll compared to other industries without a noticeable amount of total sale. Which means even paying the same amount to the employee the output is more compared to all other Industries except for Food, Drinks and Tobacco industry for Basic and Fabricated metal products, Machinery and Equipment, Non-Metallic Minerals industry. Also indicating that several other industries like Medical Device Manufacturing, Transport Equipment has least Return of Investment as a low total sale but paying the same amount of payroll as other industries.

Dashboard 5 Geographic breakdown of goods exports and imports



In this Dashboard we have combined map and pie chart so that it can convey more information in single representation, it explains total export and import of goods across different country and sum of total goods.

The EU accounted for €70,984 million (50%) of total exports in 2018 Exports to non-EU countries were valued at €69,851 million in 2018, which is an increase of €10,049 million (+17%) on the 2017 level of exports.

The USA was the largest export destination in 2018, accounting for €39,120 million or 28% of total exports. There were €54,083 million of imports from the EU in 2018, representing 60% of total imports.

Imports from non-EU countries totaled €36,092 million, There were €6,446 million exports to the EU in December 2018, of which €1,960 million went to Belgium and €976 million went to Germany.

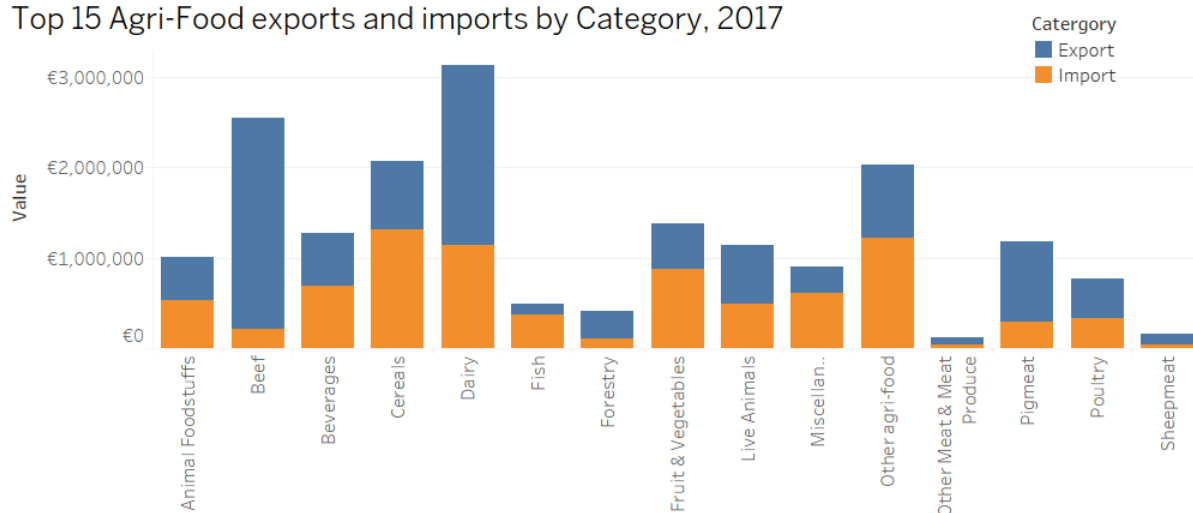
Exports to EU countries in December 2018 increased by €859 million. The USA was the main non-EU destination accounting for €2,513 million (21%) of total exports in December 2018.

Imports from the EU were €4,709 million (55%) of total imports in December 2018, which is an increase of €428 million (+10%) over the same month in 2017.

The USA with €1,428 million (17%) and China with €485 million (6%) were the main non-EU sources of imports.

Dashboard 6: Top15 Agri-food exports and imports by category,2017

Top 15 Agri-Food exports and imports by Category, 2017



Tabular chart import and export by category

| Category | Cereals | Dairy | Fish | Forestry | Fruit & Ve.. | Live Anim.. | Miscellan.. | Other agr.. | Other Me.. | Pigmeat | Poultry | Sheepme.. |
|----------|---------|-----------|----------|----------|--------------|-------------|-------------|-------------|------------|----------|----------|-----------|
| Export | 5,972 | 19,92,508 | 1,20,090 | 3,04,195 | 5,00,569 | 6,58,362 | 2,90,172 | 8,00,664 | 90,696 | 8,91,648 | 4,40,726 | 1,12,168 |
| Import | 7,196 | 11,37,118 | 3,68,528 | 1,12,508 | 8,81,058 | 4,87,560 | 6,15,936 | 12,23,438 | 34,221 | 2,88,250 | 3,31,470 | 45,334 |



Agri-food Exports and Imports statistics provide data on the movement of goods between countries. The statistics are a combination of Customs-based non-EU trade statistics and data from the Intrastat Survey of Irish traders involved in trade with other EU member states.

In this dashboard, we have visualized top 15 food items exported and imported across the globe from Ireland. The stacked bar chart here explains the total import and export of food items while the table below explains the same information with numerical values and highlights the cell as per the contribution.

We can visualize that the beef product is imported less compared to its export. This justifies that Ireland is the fifth largest beef exporter in the world and the largest exporter of beef in Europe. Total beef production in Ireland stands at approximately 520,000 tons, with around 470,000 tons destined for export. Exports of beef, sheep, pig meat and poultry amounted to almost €3.8 billion in 2017 with exports of bovine meat and offal accounting for over 60% of this value. There were 547,000 tons of bovine meat and offal exported in 2017, with a value of €2.4 billion.

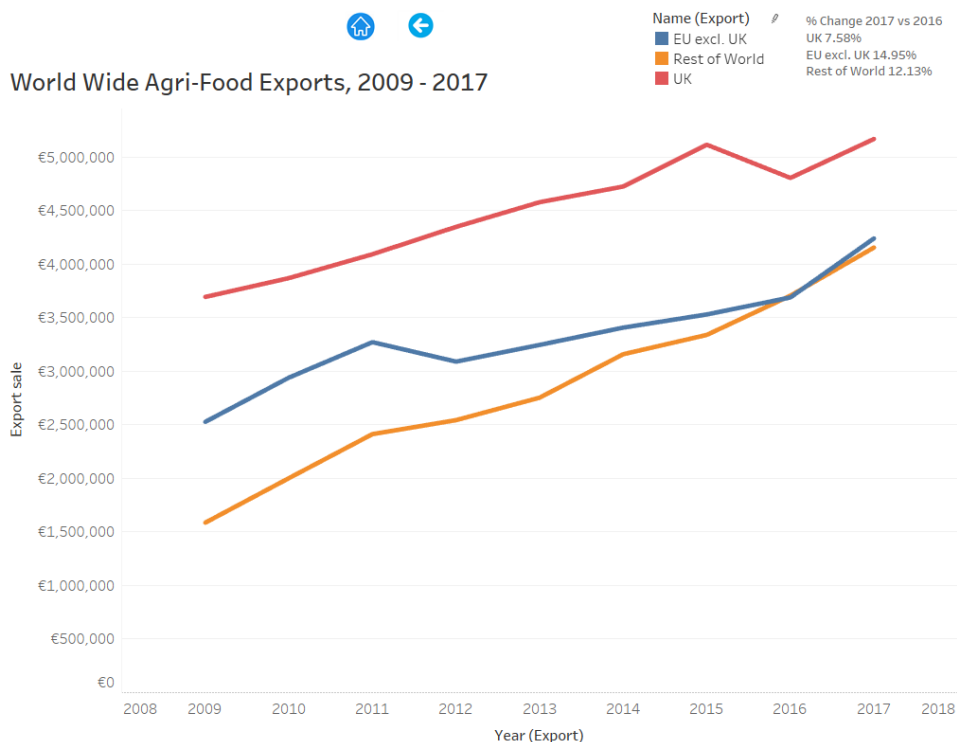
Ireland imported over 83 million liters of wine in 2017. The total value of wine imports in 2017 was €278 million, and over 96% of total wine imports came from ten countries.

Dashboard 7: Agri-Food Trade

The agri-food sector is Ireland's largest indigenous industry, employing 8.4% of the working population. Collectively, the sector achieved revenues of €26 Billion in 2015, contributing enormously to the viability of Ireland's rural and coastal communities. The agri-food sector is export-orientated accounting for 10.7% of merchandise exports.

Brexit poses enormous challenges for the agri-food and fisheries sectors by virtue of their exposure to the UK market. The most immediate impact has been caused by the significant drop in the value of Pound Sterling against the Euro, while the possible long term impacts related to import controls on animal, plant and products of animal and plant origin, as well as the certification of Irish agri-food exports to the UK in accordance with any UK requirements in this regard.

Agri-food sector trade is broken down into 24 categories identified and agreed by the Department of Agriculture, Food and the Marine and the Central Statistics Office. These categories include non-edible agri-food items such as Forestry, and Animal Hides and Skins along with traditional Food and Beverage products.



Above dashboard 7 screenshot depicts the percentage change of export sales in 2017 vs 2016

Between the period 2009 - 2017 agri-food exports increased by 74% from €7.8 billion to €13.6 billion. Exports to the UK during this period increased by 40%, with exports to the rest of the EU increasing by 68%. However, the most significant export growth was seen in exports to non-EU destinations (+162%).

Despite the growth in new markets, the UK remains by far our single largest trading partner for the agri-food sector, in 2017 agri-food exports to the UK totaled € 5.2 billion (38%) while imports were €4.1 billion (48%) with a trade surplus of over €1 billion.

Result and Recommendations

The information gained after performing analysis using tableau would be impossible to gain by just having the recorded sheets of numbers no matter how unique and precise it was. It's exceptional the way data visualization helps in interpreting and understanding the data and it's potential by showing various insights using graphs and charts. The use of Tableau in this project helped us to understand the data, like which market to focus on and why. Considering that choice of business for Irish company will be best if it has constant demand and for which you don't need to have a high budget and funding. Hence the Agri-food Industry has the best opportunities in present and future. Several visual dashboards helped in funnelling our broad ideas towards a clear picture of focusing on Agri-food industry.

Challenges:

- The UK is the biggest destination for Irish agri-food exports and therefore the issues associated with UK exit from the EU and UK renegotiation of its relationship with EU must be monitored and managed to minimize potential negative impacts.
- Recent exchange rate fluctuations underline the ongoing economic volatility in global markets in Eurozone countries and represent an ongoing challenge for the Irish agri-food sector given the large export component to the value of the sector. While in the short term recent drops in the value of the euro are positive for Irish exports to the UK and other countries it is clear that over the medium to longer-term the Euro is likely to recover therefore reducing the competitiveness of Irish exports on the UK and non-EU markets and this volatility is likely to remain a constant external factor for the sector. The sector must, therefore, maintain and improve its overall international competitiveness to minimize the risks associated with currency fluctuations.

Business opportunities:

- Significant growth opportunities across all subsectors of the Irish agri-food industry. Cumulatively, its projects export has the potential to grow to €19bn per annum in value by 2025, This export growth will be driven chiefly by expansion in dairy, beef, seafood and consumer food and drinks exports.
- Productivity improvements that are driven by innovation and the adoption of the latest technologies; and value addition to sustainably produced primary materials, which will support local employment growth, ensure the viability of local producers and protect the environment and natural resources.
- The creation of an additional 23,000 direct jobs in the agri-food sector all along the supply chain from primary production to high value-added product development.
- Various other markets yet to explore as for present time Irish goods are not yet introduced in the major scale. (i.e. in India, Africa, South American, Middle Eastern Countries)

Reference:

<https://www.agriculture.gov.ie/media/migration/foodindustrydevelopmenttrademarkets/agri-foodandtheeconomy/foodwise2025/report/FoodWise2025.pdf>

<https://www.agriculture.gov.ie/media/migration/foodindustrydevelopmenttrademarkets/agri-foodandtheeconomy/publications/DepartmentAgricultureAnnualReviewOutlook2019200919.pdf>

<http://www.iiea.com/documents/IIEA%20paper.pdf>

<https://www.agriculture.gov.ie/media/migration/foodindustrydevelopmenttrademarkets/agri-foodandtheeconomy/foodwise2025/report/FoodWise2025.pdf>

