

Introduction

The Annual Business Survey of Economic impact comprises data from 2000-2017 of around 4200 companies in Ireland. These companies are classified as Irish owned companies and Foreign companies and they are further categorised in different sectors such as IT, Medical Devices Manufacturing, Financial Services etc, respectively.

We are conducting data analysis to compare the Foreign company's economic impact and comparing it to the Irish owned companies to identify and interpret the most profitable Business Sector for Irish owned companies for future investment.

Data description

We are referring to Annual Economic Survey for various sectors in Ireland to analyse the growth of Foreign Companies with respect to Irish owned companies. Dataset contains different attributes and significant economic performance indicators such as Total Sales, Employment, Payroll Cost, Direct Expenditure etc for numerous sectors over the years from 2000 to 2017.

1. Manufacturing and Other Industry Food/Drink & Primary Production:

- a. Food & Drink
- b. Agriculture
- c. Fishing Forestry
- d. Mining & Quarrying

2. Traditional Manufacturing:

- a. Textiles
- b. Clothing
- c. Footwear & Leather
- d. Wood & Wood products
- e. Paper & printing
- f. Rubber & plastics
- g. Non-metallic minerals
- h. Basic & fabricated metal products
- i. Electrical equipment
- j. Machinery & equipment
- k. Transport equipment

3. Modern Manufacturing:

- a. Chemicals
- b. Computer, electronic & optical products

- c. Medical devices
- 4. Energy, Water, Waste & Construction
- a. Energy, water, waste & construction 5.

Information, Communication & Computer:

- a. Publishing, broadcasting & telecommunications
 - b. Computer programming
 - c. Consultancy & related facilities
 - d. Other IT and computer services 6.
- Business, Financial & Other Services:
- a. Financial services
 - b. Business, education & other services

Visualization is done on specific tables from given dataset: I.

Total Sales per Person Employed in Manufacture.

- II. Total Sales
- III. Total Exports (€ m)
- IV. Total Employment
- V. Total Cost of Services Sourced in Ireland(€m)
- VI. Total Cost of Services (including Royalties) (€ m)
- VII. Total Cost of Materials Sourced in Ireland (€ m)
- VIII. Irish-Sourced Services as a Percentage of Total Services (%)
- IX. Irish-Sourced Materials as a Percentage of Total Materials (%)

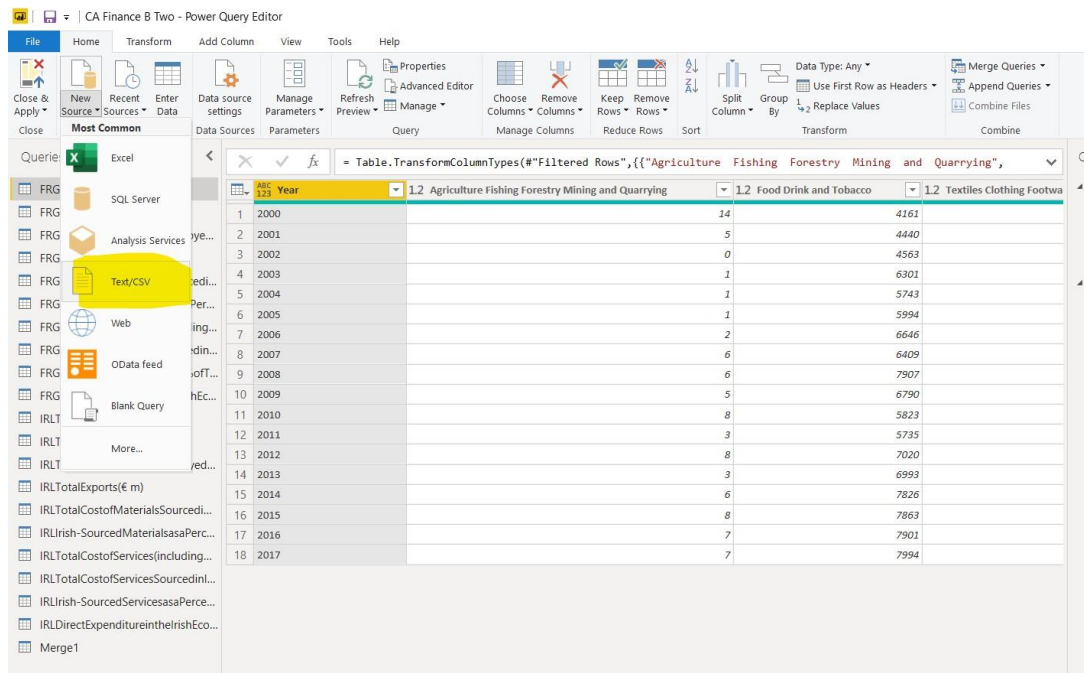
Direct Expenditure in the Irish Economy (Payroll, Irish Materials, Irish Services) (€ m) [Data](#)

Cleaning

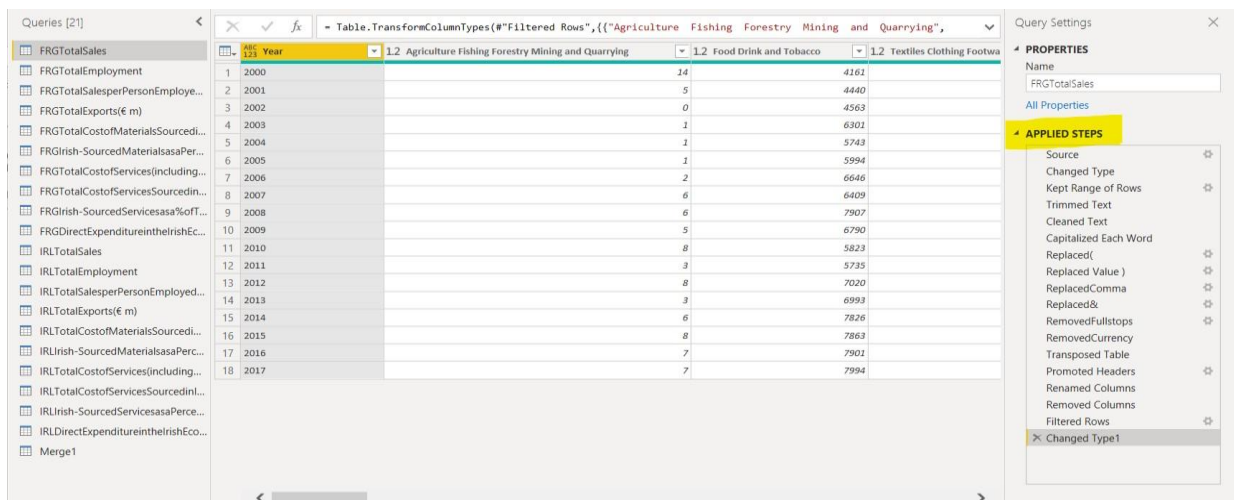
We have used Data Cleaning, Data Parsing and Data visualization methodologies of Power BI Business Intelligence Tool to analyse and infer which sectors are to be focused for future business.

The Annual Economic Survey for Business Dataset is the huge unformatted csv data. We have applied below steps to clean and extract required tables from it,

- Export CSV file to Power Query editor



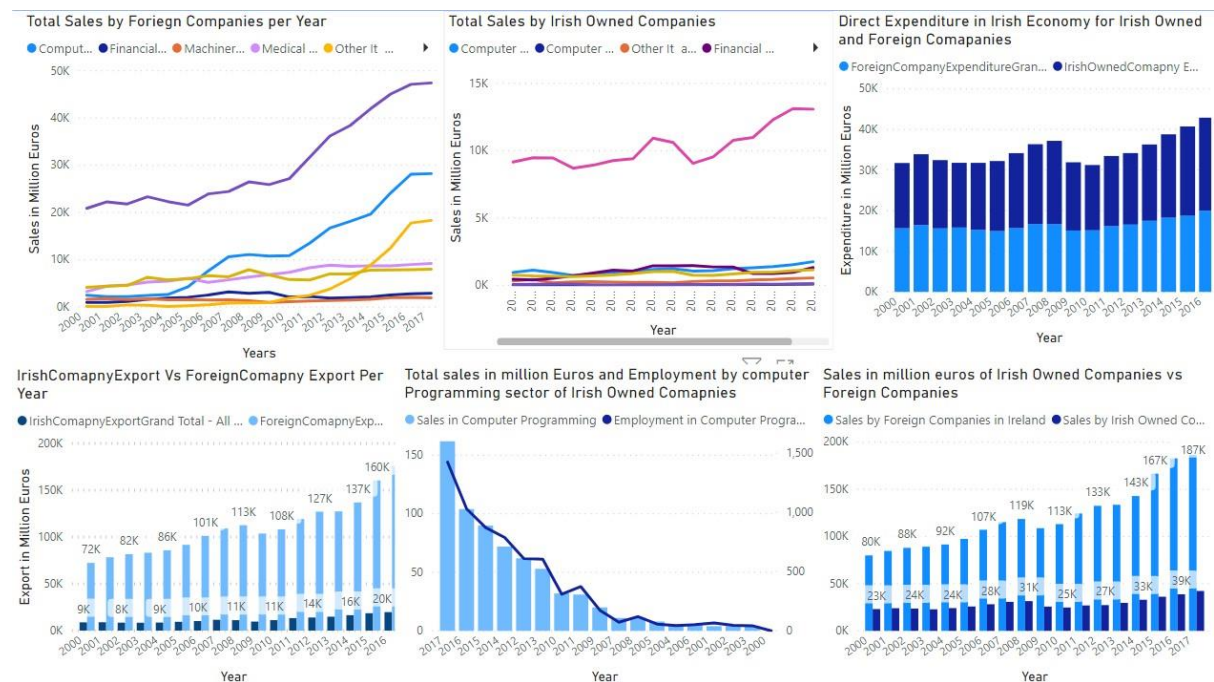
- Apply different steps as shown in the highlighted screenshot to Filter Rows, Filter Columns, Cleaning Data, Transposing or Pivoting Data and finally to change the data type of required attributes for performing further operation on data.



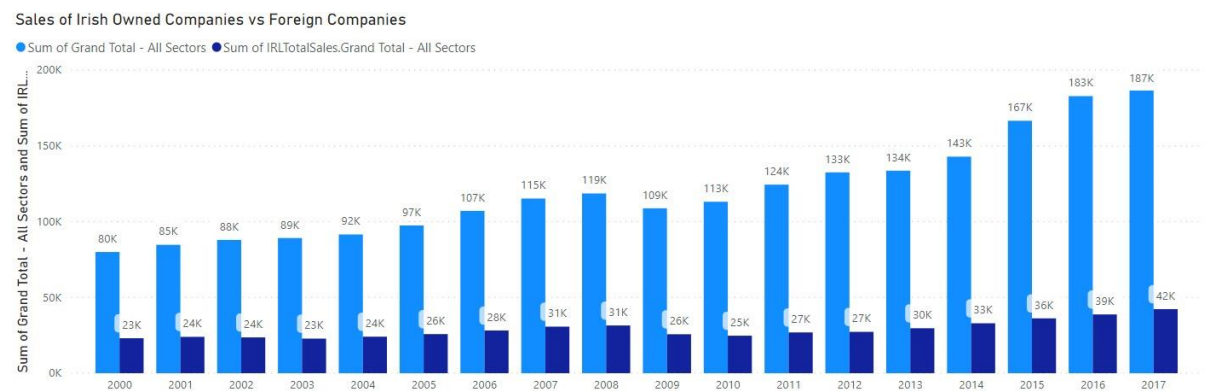
FRGTotalSales

```
let
    Source = Csv.Document(File.Contents("C:\Users\harsh\Downloads\ABSEI-2000-2016-Foreign-Owned-Companies.csv"),[Delimiter=";", Columns=21, Encoding=1252, QuoteStyle=QuoteStyle.None]),
    #Changed Type = Table.TransformColumnTypes(Source,{{"Column1", type text}, {"Column2", type text}, {"Column3", type text}, {"Column4", type text}, {"Column5", type text}, {"Column6", type text}, {"Column7", type text}, {"Column8", type text}, {"Column9", type text}, {"Column10", type text}, {"Column11", type text}, {"Column12", type text}, {"Column13", type text}, {"Column14", type text}, {"Column15", type text}, {"Column16", type text}, {"Column17", type text}, {"Column18", type text}, {"Column19", type text}, {"Column20", type text}, {"Column21", type text}}),
    #Kept Range of Rows = Table.Range(#Changed Type, 1, 99),
    #Trimmed Text = Table.TransformColumns(#Kept Range of Rows,{{"Column1", Text.Trim, type text}}),
    #Cleaned Text = Table.TransformColumns(#Trimmed Text,{{"Column1", Text.Clean, type text}}),
    #Capitalized Each Word = Table.TransformColumns(#Cleaned Text,{{"Column1", Text.Proper, type text}}),
    #Replaced = Table.ReplaceValue(#Capitalized Each Word, "(", " ", Replacer.ReplaceText, {"Column1"}),
    #Replaced Value = Table.ReplaceValue(#Replaced, ")", " ", Replacer.ReplaceText, {"Column1"}),
    #ReplacedComma = Table.ReplaceValue(#Replaced Value, ",", " ", Replacer.ReplaceText, {"Column1"}),
    #Replaced& = Table.ReplaceValue(#ReplacedComma, "&", " ", Replacer.ReplaceText, {"Column1"}),
    #RemovedFullstops = Table.ReplaceValue(#Replaced&, ".", " ", Replacer.ReplaceText, {"Column1"}),
    #RemovedCurrency = Table.SelectRows(#RemovedFullstops, each ([Column2] <> "€ m") and ([Column1] <> "Energy Water Waste and Construction" and [Column1] <> "Information Communications and Other Services" and [Column1] <> "Manufacturing and Construction")),
    #Transposed Table = Table.Transpose(#RemovedCurrency),
    #Promoted Headers = Table.PromoteHeaders(#Transposed Table, [PromoteAllScalars=true]),
    #Renamed Columns = Table.RenameColumns(#Promoted Headers,{{" ", "Year"}}),
    #Removed Columns = Table.RemoveColumns(#Renamed Columns,{{"1", "2"}},
    #Filtered Rows = Table.SelectRows(#Removed Columns, each ([Year] <> "15/16" and [Year] <> "Jul-16")),
    #Changed Type1 = Table.TransformColumnTypes(#Filtered Rows,{{"Agriculture Fishing Forestry Mining and Quarrying", type number}, {"Food Drink and Tobacco", type number}, {"Textiles Clothing Footwear and", type number}}),
    in
    #Changed Type1
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Based on the cleaned dataset of economic survey for different business sectors, we have created interactive dashboard in Power BI tool. We can see the combination of different charts and graphs. We have processed data analysis and inferred various interpretations from these self-explanatory visuals.



Total Sales Irish Owned Companies vs Foreign Companies



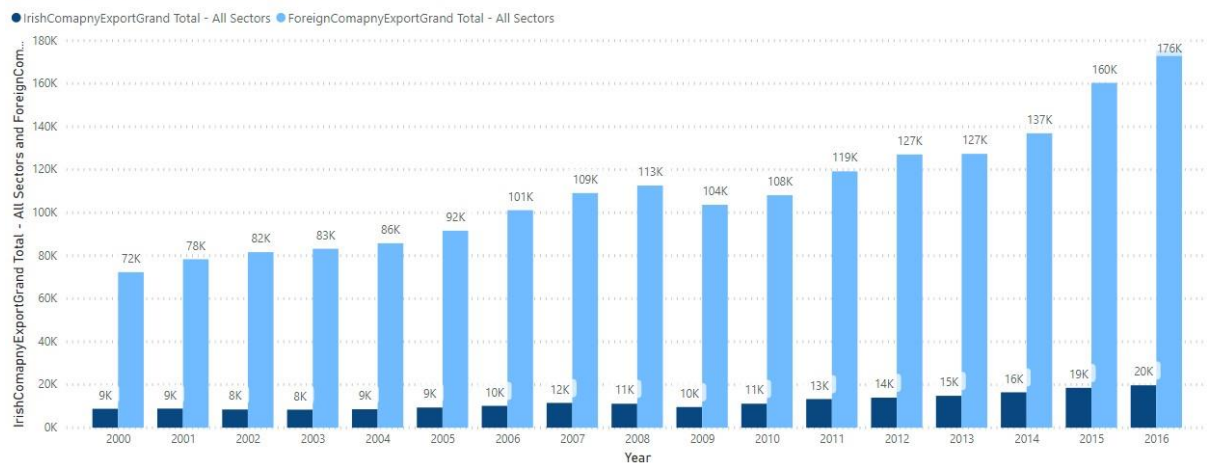
Above Clustered graph derives the grand total of the sales achieved by Irish owned companies and Foreign companies.

Irish owned companies' sales are comparatively very less than that of foreign company sales. IN the year 2017 Irish companies have made the sales in all the sectors amounted Euro 42 billion where foreign companies have made it to euro 187 billion.

This survey graph clearly proves that Foreign companies are majorly influencing Irish companies than Irish owned companies.

Irish Company Export Vs Foreign Company Export per Year

IrishCompanyExport Vs ForeignCompany Export Per Year



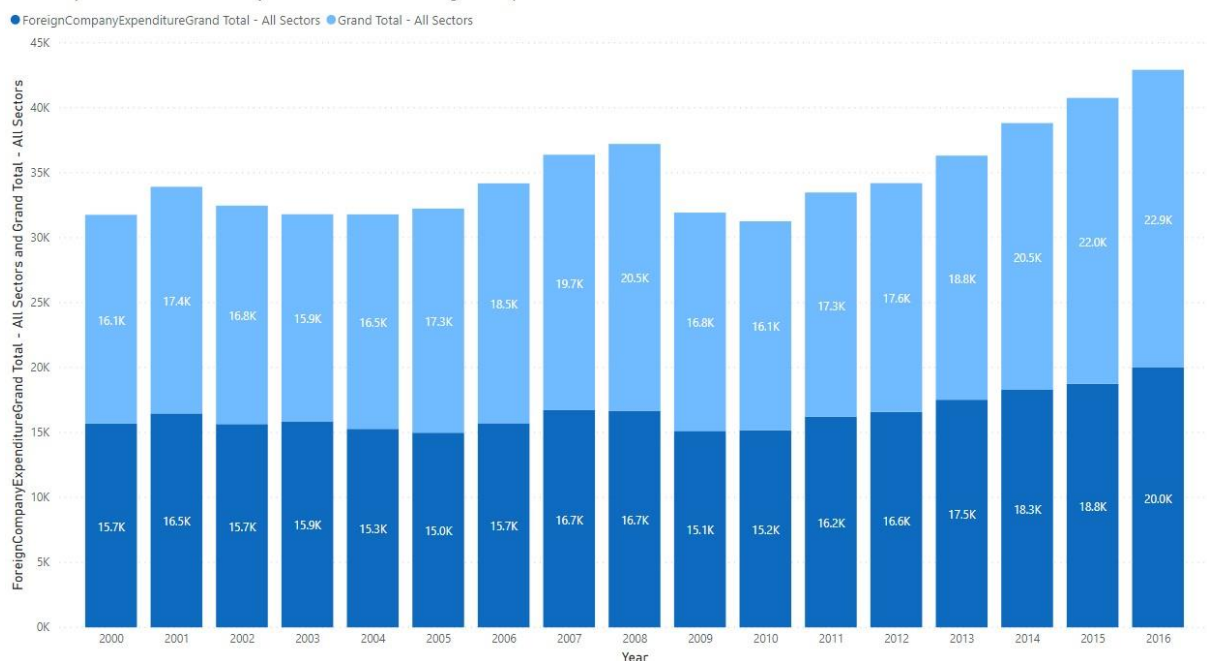
The above graph illustrates the export intensity of Irish company and foreign company over the period of 2000 to 2016.

Irish owned companies are gradually increasing their export, it has raised to Euro 20 billion from Euro 9 billion since year 2000 till 2016.

Foreign companies have exponentially risen the curve of export and have achieved the peak of Euro 176 billion in year 2016.

Direct Expenditure in Ireland's Economy for Irish owned and Foreign companies in Ireland

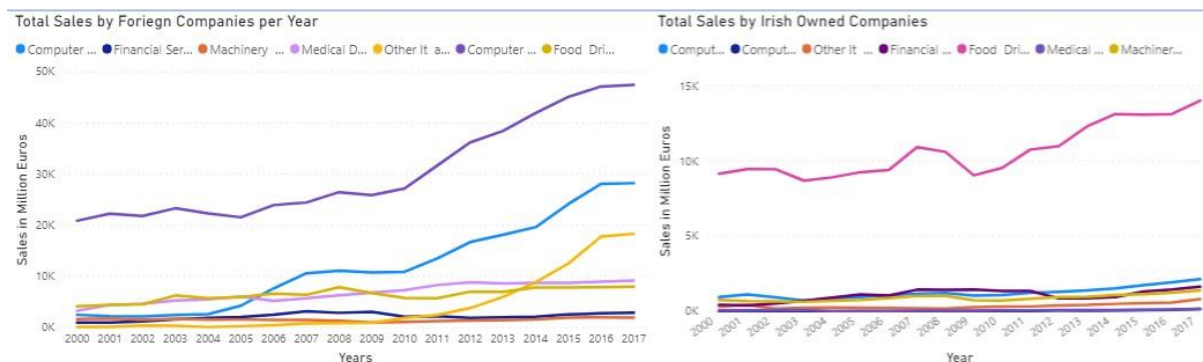
Direct Expenditure in Irish Economy for Irish Owned and Foreign Companies



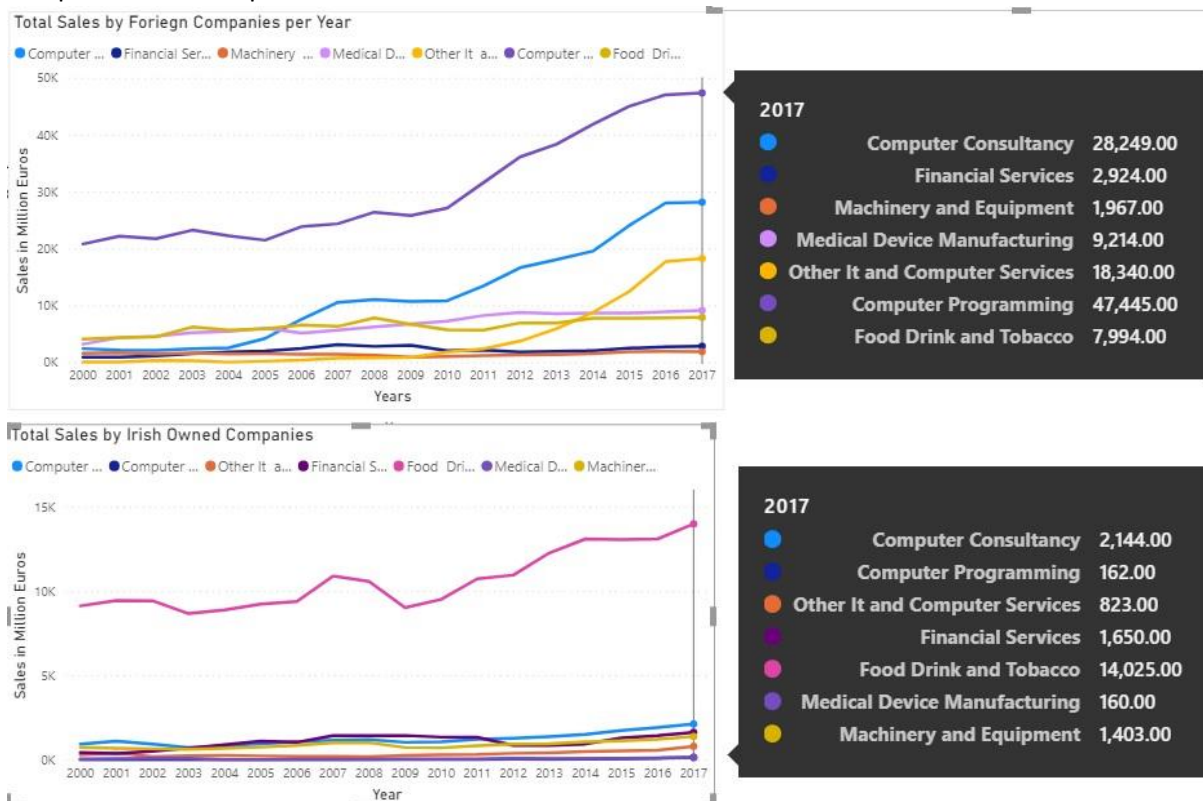
In 2016, Direct Expenditure in the Irish Economy by all the sectors industries is amounted Euro 42.9 billion and it is the highest level of direct expenditure in 16 years.

Irish companies have spent around Euro 22.9 billion in Irish Economy in terms of payroll and purchase of Irish material and services whereas foreign companies have spent Euro 20 billion. Foreign companies' expenditure is gradually increasing since 2010.

Total Sales per year for Foreign and Irish owns companies



In the above Line charts, the left chart represents total sales by various sectors owned by foreign companies in Ireland whereas, the right chart represents total sales by various sectors owned by Irish companies over the period of 2000-2017.



We can compare from the charts above, how much sales foreign companies are making in various sectors with respect to the same sales made by the Irish owned companies in Ireland. Based on dataset and observing the significant growth we have selected the major contributors of foreign companies' sales to be compared with Irish owned companies.

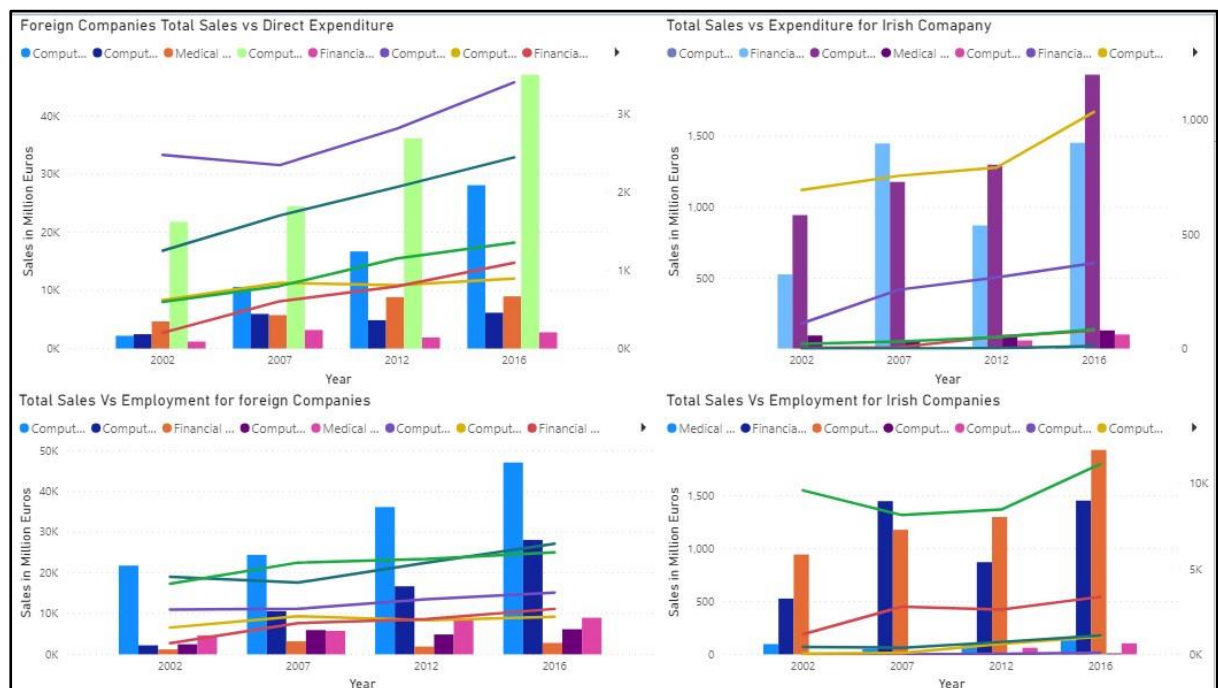
- **Computer Consultancy:** - If we compare the sales of this sector with Irish owned companies which is Euro 2.144 billion and for foreign companies is Euro 28.249 billion i.e. Irish owned companies are contributing only 7.5% of total sales in year 2017. Numbers suggest that this is the essential sector for Irish companies to capture the market.
- **Financial Services:** - In financial services though the graph shows significant growth of Irish companies from year 2000 to 2017 it is negligible if we compare the sales numbers with

Foreign companies which are providing services in Finance sector. Over the years total sales achieved by Irish companies in financial sector is Euro 19.33 billion which is only 12% that of Foreign owned companies have achieved sales for the same time in Ireland.

- **Medical Devices:** - This is the hottest sector for Irish companies where they need to go long way to reach to the peak where foreign owned companies are making sales. If we compare the sales each year made by foreign companies in Medical Device Manufacturing sector with Irish owned companies, the numbers by Irish owned companies are disappointing. In the year 2017 Irish owned companies have made only 0.17% sales that of foreign companies. If we look at the demand from the sales in Ireland, sales made by Irish owned companies are very less and this can be the opportunity for Irish Companies to emerge in this sector.
- **Computer Facilities Management:** - Based on the line chart observation elevation for this sector for Irish owned companies is negligible as compared to the exponentially growing line representing the sales by foreign companies in this sector.
- **Computer Programming:** - We have selected Computer Programming sector for further analysis because of the enormous growth in sales amounted by this sector over 17 years. In the year 2017 foreign companies have achieved sale of Euro 47 billion wherein Irish owned companies are merely selling Euro 162 million. This trend line observation implicates huge scope of exponential growth to be overcome for Irish owned companies.

We are going to perform various analysis and create different visuals to identify most profitable sector for industrialists and businesspersons of Ireland to step in for contributing more to the Irish Economy.

For further analysis we will be focusing on selective sectors for comparing Economic Expenditure, Employment and Payroll Costs for finalizing most profitable business sector.

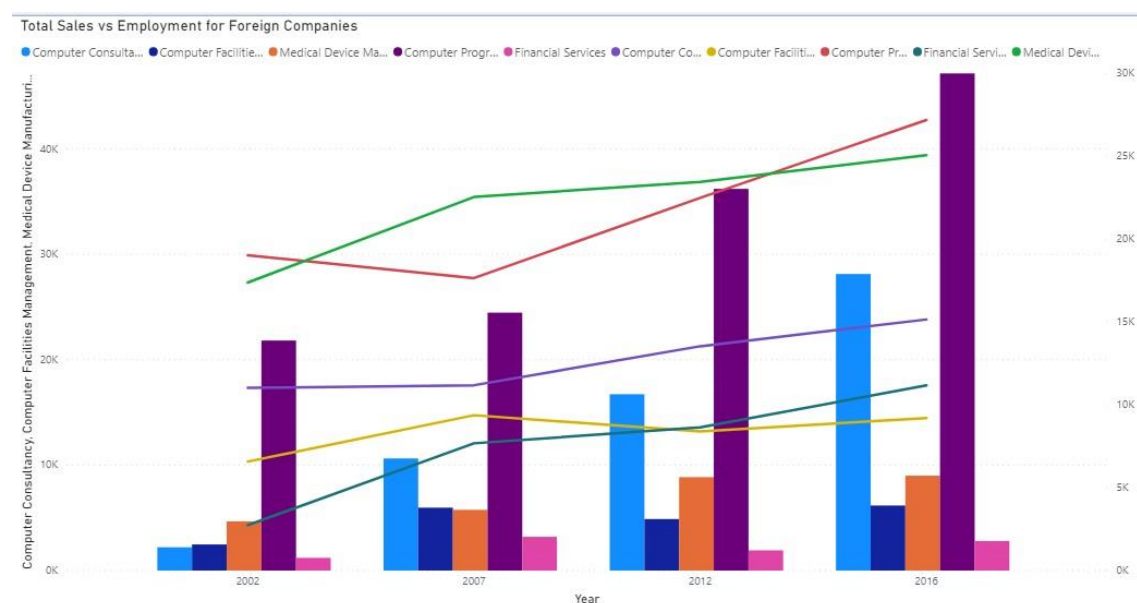


Employment created by Irish Companies vs Foreign Companies

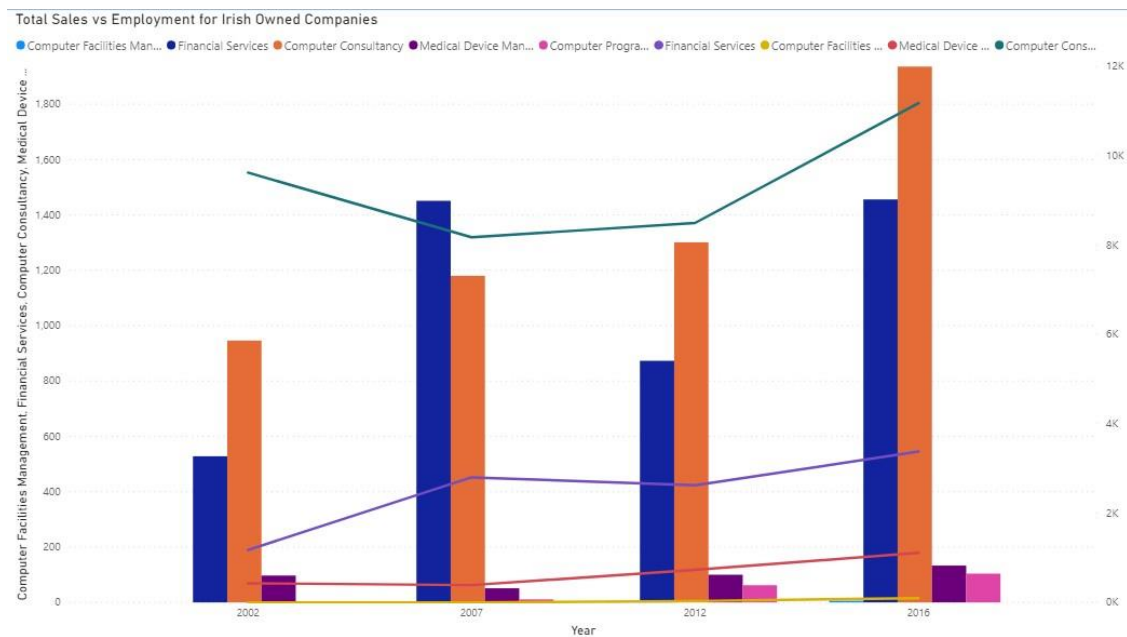
In terms of making economy stronger It is important for nation to emerge with profitable industries and create maximus number employment. In respect to analyze the growth of various sectors by Foreign companies and Irish owned companies we have derived below Line and Column Clustered Charts based on the sales and employment dataset.

If we compare the IT industries especially in Computer Consultancy, Computer Programming and Computer Facility Management there is exponential growth in sales as compared to that employment provided by the foreign companies is not equally proportional.

Also, in Financial Services and Medical Device Manufacturing Sectors sales growth by foreign companies have raised significantly in last 15 years wherein employment provided in Ireland is not growing with the same pace.



This concludes the unsustainability of the Irish Economy in contrast if we compare the growth in the sales of the same sector by Irish owned companies the number of employees is increasing with the same rate. This graph potentially infers that Irish Owned Companies can significantly increase the rate of employment in the country as compared to Foreign Companies, ultimately contributing to Irish economy more.

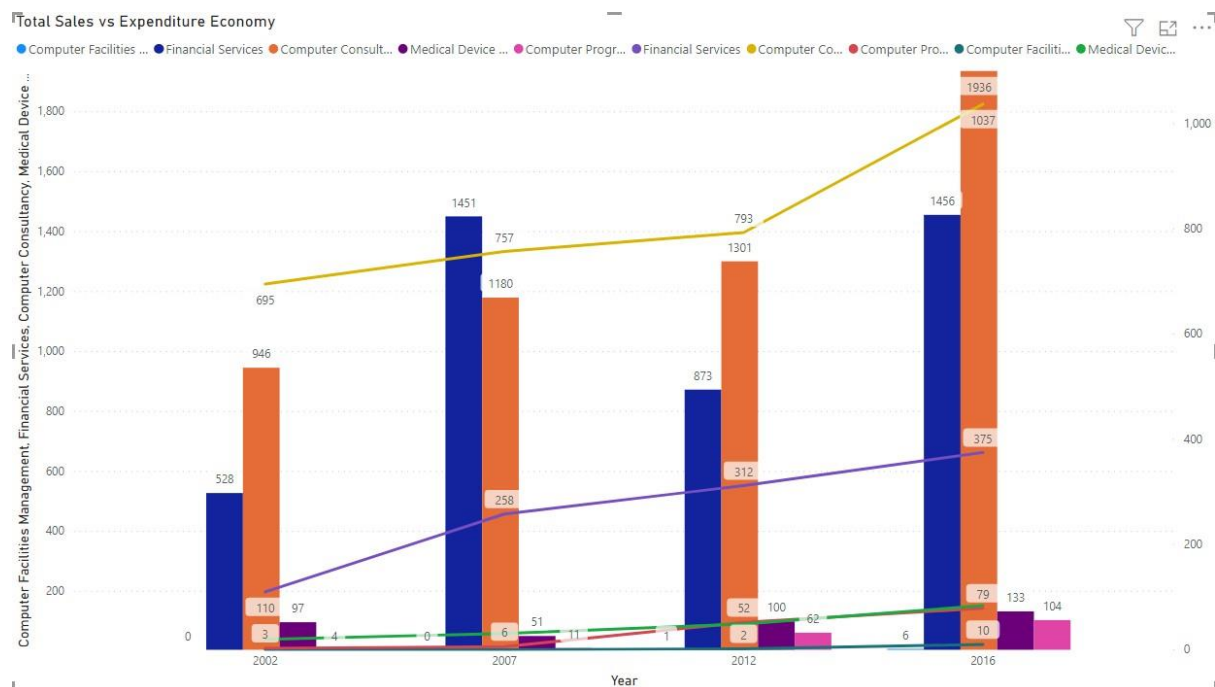


Direct Expenditure of Foreign Companies vs Irish Owned Companies

Annual Business survey also gives the information about the Direct Expenditure of various sectors in Irish Economy.

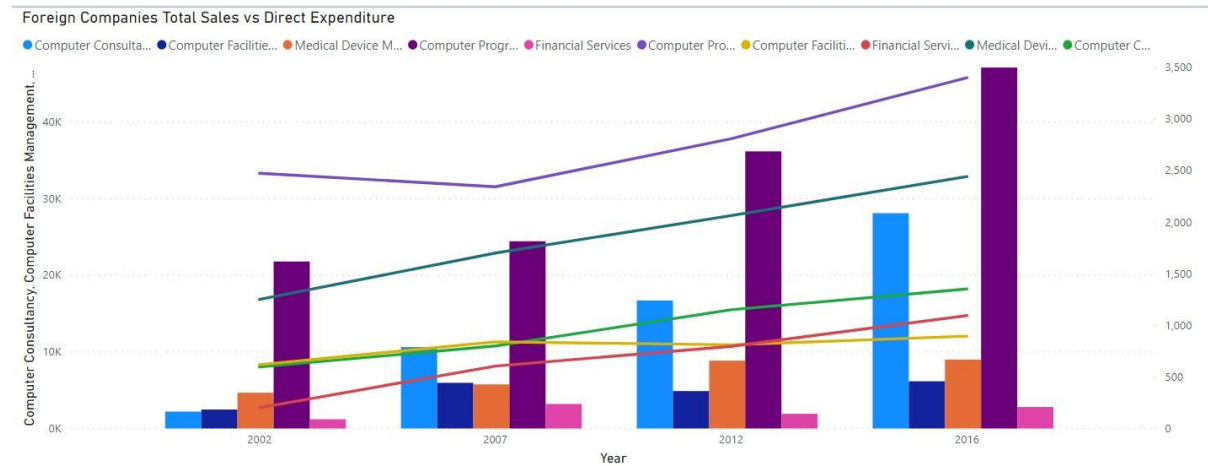
If one of the sectors is making huge amount of sale per year but their Economic expenditure in Payroll Cost, Purchase of Material and services is also significant then not necessarily that industry is most profitable industry.

In the below line and clustered chart, we are comparing the sales of different sectors of Irish owned companies with their respective economic expenditure.



Hereby we can conclude that Computer Consultancy sector has been the most Direct Expenditure payer of Irish Economy throughout the timeline from year 2000 to year 2017 as shown above.

If we compare the direct expenditure of foreign companies in the same sector it is linear to the sales, they are making every year.



From the above comparison we can say that if we can conclude that Computer Programming Sector is generating Euro 47.2 billion sales in the year 2017. Out of this sale only Euro 104 million is generated by the Irish owned companies.

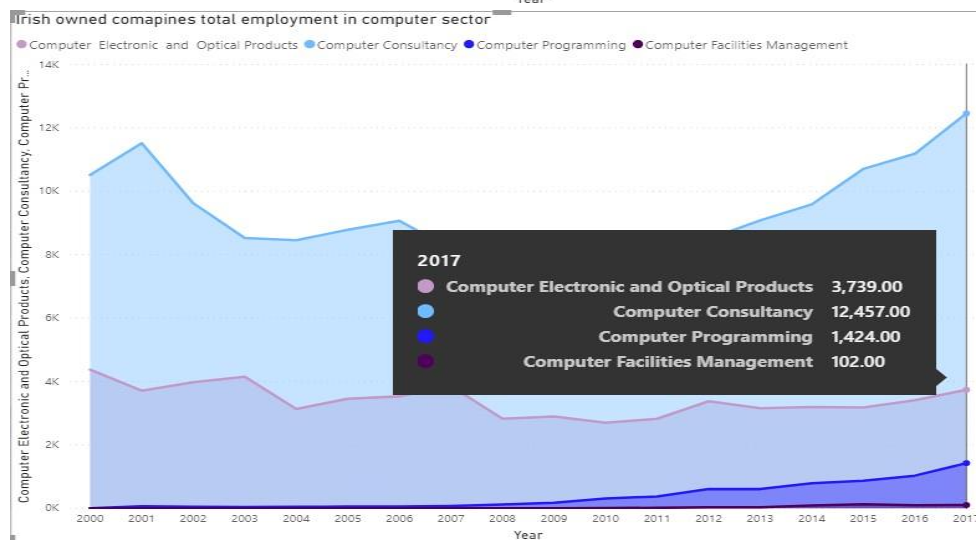
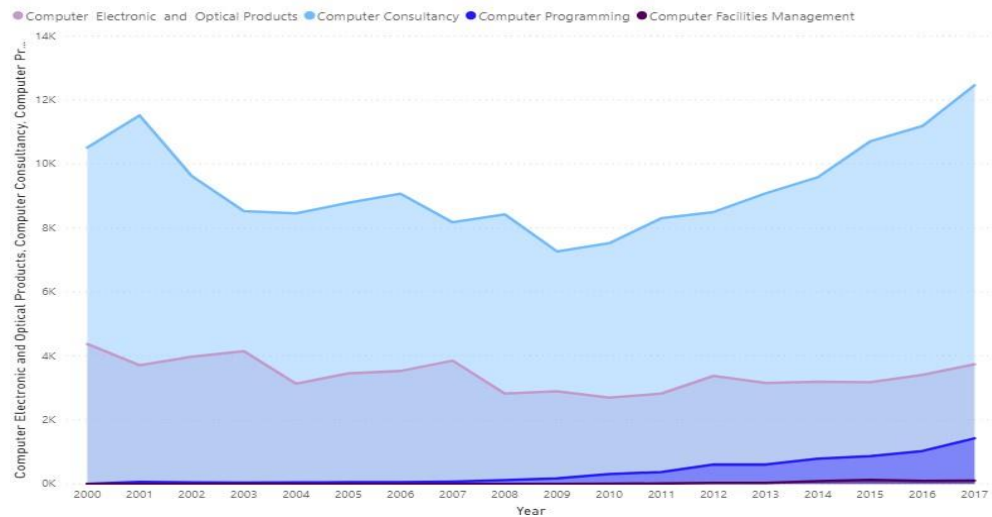
Direct Expenditure of the Computer Programming sector is negligible to the amount of revenue is being generated by this sector for the Irish Economy.

Over the past 17 years based on the visual there is huge Employment being created in Ireland by both Foreign and Irish Owned Companies.

Services and {product requirement of Computer programming sector is huge wherein Irish owned companies are unable to fulfil or contributor to this sector significantly.

We can conclude that Computer Programming sector is new gold mine for Irish Economy to improve with new business ventures.

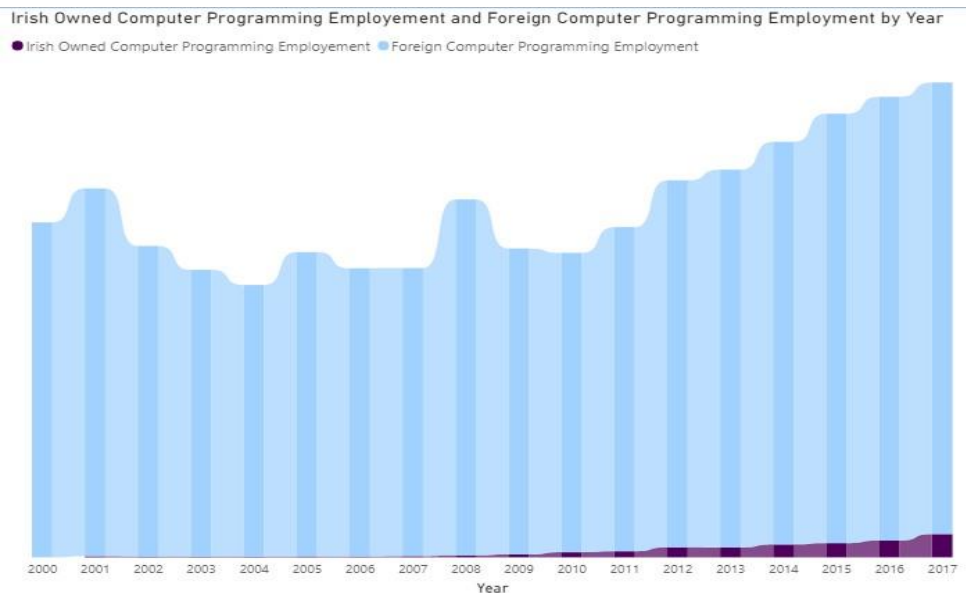
Irish owned companies total employment in computer sector



Area chart above shows how Employment is distributed in IT sector which comprises of four business sectors which are ranked in their respective contribution to employment as follows,

- Computer Consultancy
- Computer Electronic and Optical Products
- Computer Programming
- Computer Facilities Management

Since year 2006 to 2017 continuous growth in computer programming sector's employment have been observed but there is significant difference in the value of employment for computer consultancy and computer programming sector, so we have a huge scope for employment in computer programming.



As we have already discussed profitable industries and maximum number of employments are the major contributors of nationwide economy. From above graph it can be inferred that computer programming sector has continuously been the major contributor for employment by foreign own companies and Irish Owned Companies. Over the time series we can see that there is significant growth in employment provided in this sector by Irish own companies. Since this employment generated is significantly lower than that of foreign own companies. We can conclude that as there are huge number of employees working in foreign owned computer programming sector can be utilised by Irish owned companies to grow in computer programming sector which in turn will contribute to Irish economy and can provide better employment options.

Conclusion

This project is developed using Power Query Editor and Power BI tool. Based on the dataset we have successfully analysed the various attributes of Foreign Companies and Irish Owned Companies such as Total Sales, Employment Rate, Direct Economic Expenditure, Payroll Cost.

After enormous analysis and comparison based on the visual, we have concluded that Computer Programming sector is the most growing and profitable sector for Irish Economy to grow exponentially.

This analytical report suggests to Irish Industrialists and Businesspersons to focus on bringing up the new ventures for more profits and magnificent growth in employment for betterment of Irish Economy.

Business Insight for future growth for selected industry

With innovation hitting the doors of every enterprise, technology has now become a critical necessity for the business and society at large to thrive. Although, the analysis states that the computer consultancy have more insights to improvise and be standalone as a key player in the market. Each vertical will look at creative ways of using technology to further enhance customer experience, substantially reduce time to market and enhance efficiency, thereby cutting costs. Many of the IT discovery and operational comes under the Computer consultancy, just like the predication which we

can reviewed in the new trends of market are related to AI, deep learning , Cloud adoption and more new technology related to computer technology.

The overall IT sector in Ireland has in several significant respects had a tremendous positive influence on the development of the economy. It consists of several sub sectors, each contributing in their own way, and each connecting with the other firms in the sector in achieving computational change in our small economy and increasing its position in key international influential circles. Ireland lagging behind the USA, Israel and other

European countries, including Eastern Europe, in terms of emerging as a stand-alone IT industry division and there is an opportunity to improvise and prepare the entire small industry for potential computing and high-tech developments. Over 105,000 people are employed in the IT technology sector in Ireland and the service sector dominates with more opportunities for IT workers are high compared to other sectors which clearly stating in Irish times. U.S. multinationals like Apple, Google and Facebook have picked Ireland as their European headquarters, attracted by a competitive tax environment, a welcoming government, and a professional workforce. These all projects the more insights for investors to make more investment on IT division and for Irish owned companies can also take participate along with multinational competitors because the opportunities are high in IT sectors. The position of Ireland remains strong, with a GDP increase of 8.2 per cent from 2019, making us the fastest growing economy in the EU. This has produced jobs for people around the industry and nationally, with the highest rates of regional job growth over the past 17 years which is clearly evident from our studies and analysis.

References

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