AS & A LEVEL BUSINESS
Using quantitative skills

DATA ANALYSIS

The time in which we now live is often referred to as the **Information Age** and one of the most important skills required of a business analyst is the ability to handle and understand various different types of data.

It has been said that if all the data generated in the world in **one** day was put onto DVDs, and they were piled on top of each other, they would reach the moon and back. Under these circumstances the ability to select **relevant** data, and ignore what is referred to as background noise, i.e., irrelevant information, is crucial.

Data comes in many forms including tables, charts and graphs. It is published in many places: newspapers, magazines and journals; company annual reports and company websites; government websites; reports from market research agencies etc. Part of the skill of the researcher is to find the relevant information in the first place. Fortunately, search engines on the internet have made this process easier than it used to be, although it is sometimes a lot harder than one might expect to find the information that one is looking for.
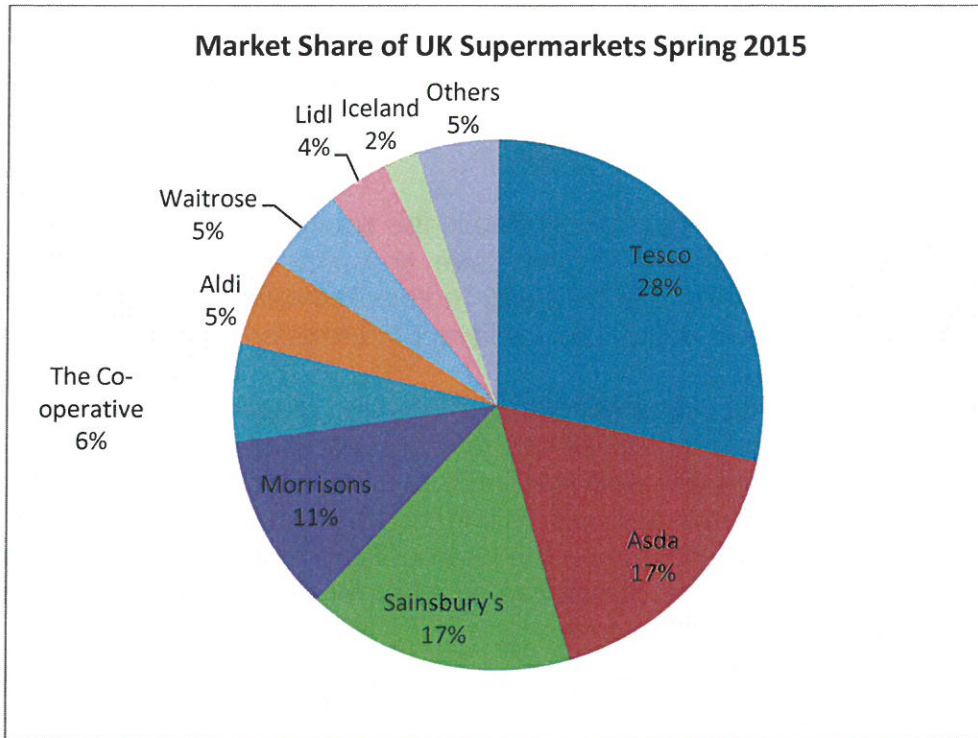
Pie Charts

All students should have learnt how to construct pie charts from studying GCSE maths, but that does not mean that they understand how to interpret them correctly. Also, just because they are something we are familiar with we should not underestimate their importance as a way of presenting, and helping to interpret, data.

One thing to remember about pie charts is that the data must add up to 100%, which is why there is often a segment labelled as 'others'.

The following table gives the market share of the main supermarkets at the beginning of 2015 (rounded to the nearest per cent).

Supermarket	Market share (12 weeks to 29 March 2015)
Tesco	28%
Asda	17%
Sainsbury's	17%
Morrisons	11%
The Co-operative	6%
Aldi	5%
Waitrose	5%
Lidl	4%
Iceland	2%
Others	5%

The same information can be presented in the form of a pie chart, see below.

Market Share of UK Supermarkets Spring 2015

Compare the pie chart to the table. What is the difference? The answer is that the pie chart is much easier to understand as it presents the information clearly and visibly. Without any thought one can answer questions such as "which supermarket has the largest/smallest share? Which is bigger Aldi or Lidl? What is Morrisons share of the market?" etc.

Bar Charts

Bar charts are also an invaluable visual way of presenting data. The table below gives details of world coffee production by continent for 2012/13 and 2013/14.

Continent	2012/13 Million bags	2013/14 Million bags
Africa	16.5	16.2
Asia and Oceania	45.3	46.6
Mexico and Central America	18.5	16.8
South America	67.1	67.2

The same information, when presented in the form of a bar chart, is much easier to interpret. It is immediately clear which continent is the most important and which is the least important. It is also quite obvious which continent's production increased and which fell. This then starts to raise further questions as to why coffee production rose in Asia and Oceania but fell in Mexico and Central America. This information may be useful for a business importing coffee into the United Kingdom.

**Coffee Production by Continent 2012/13 and 2013/14**
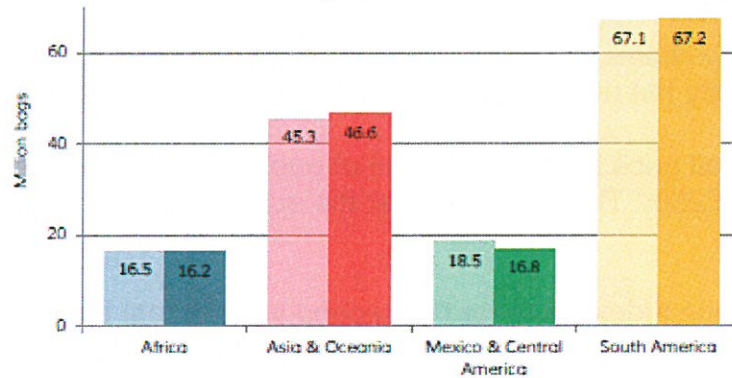
Line Graphs

Line graphs are used to compare two things. The X axis represents a constant, for example time and the Y axis represents a variable, such as the quantity of a particular commodity sold or the value of a commodity over a period of time. It should be recognised that the two are not necessarily the same thing. For instance the quantity of coffee sold over a year may increase but, due to a fall in price, the value of the coffee sold may actually fall.

The graph below shows the price of coffee throughout the period October 2013 to October 2014. If this information had been presented as a table it would have been difficult to identify the trend. As a graph the visual impact is striking and questions such as "why did the price of coffee rise so dramatically after February 2013" immediately suggest themselves.

International Coffee Organisation (ICO) composite indicator daily prices (Coffee year 2013/14)
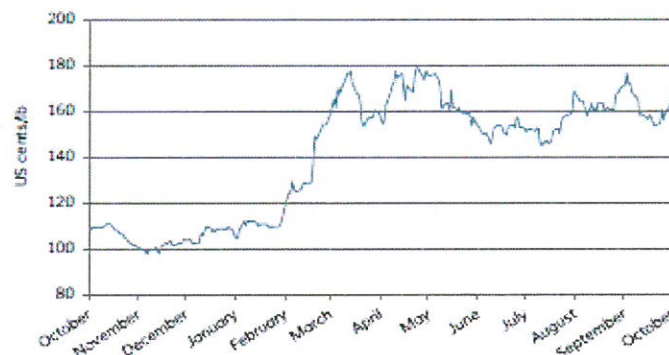
A business might use a similar graph to plot the sales revenue from one or more of its products to see which ones are doing well or badly.

Index numbers

Index numbers are used in order to make numerical data easier to understand. One of the most common index numbers is the retail price index, which measures how much the price of a typical basket of goods have increased over the previous year.

Index numbers that measure annual changes start with a base year whose value is given as 100. In reality the numerical value of the base year could be anything.

In the case of the retail price index the basket of goods in year one might have cost, for argument's sake £250. The following year the same basket of goods might have cost £260.

In order to calculate the index value for the second year all that has to be done is to divide 100 by £250 and multiply by £260 giving an answer of 104.

The same process can be applied to the following year. If the basket of goods now cost £265 once again we divide 100 by £250 (the numerical value for the **first** year) and multiply by £265, giving us an index number of 106 for year 3.

The index numbers are easier to understand than the raw data as can be seen from the table below.

	Year1	Year 2	Year 3
Cost of basket	£250	£260	£265
Index number	100	104	106

Analysing Markets

Businesses carry out market research so that they can identify, anticipate and ultimately fulfil the needs and wants of their customers, both existing and potential. But why is it that some companies spend millions of pounds on market research whilst others spend nothing? The answer most probably lies in the nature of the product and the market that the business is operating in.