Data analysis and management

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Organisations store vast amounts of information electronically - about their customers/clients, sales, finances or stock, for example. People are needed to input data and keep it up to date, manage the storage and retrieval of data, and analyse it for different purposes. There are opportunities at all levels with qualifications ranging from GCSEs (or equivalent) to degrees.

Areas of work

The main roles concerned with inputting, maintaining and analysing data are described below.

Data input

At this level staff are involved in ensuring that the data held within an organisation is reliable - i.e. that it is up to date and accurate. Using various data sources they input new data, delete old information, update or merge data etc. Job titles vary - you could be, for example, a **data input clerk**, **data entry clerk** or **data administrator**. The role may be part of a broader clerical or administrative assistant position.

Database administration

The growing amount of stored information means that **database administrators (DBAs)** - sometimes known as **database managers** or **controllers** - are needed to manage the storage and retrieval of data.

A wide variety of information can be collected in many different ways; for example, tracking the web history of users, using surveys to gather feedback, or using loyalty cards to collect details of customer shopping habits. Creating and maintaining a central database that can store, organise and retrieve the necessary information is a complex matter.

Depending on the complexity of the databases, DBAs may work closely with other data/computer specialists. The tasks performed by a DBA depend on the level of the role; a DBA may:

- ensure security systems are operating correctly
- support users of the system - making sure the information is easy to access and promptly solving any technical problems
- make sure back-up systems are working effectively, and that data can be retrieved in the event of a system failure or disaster
- develop the database and conduct performance-tuning tasks - changing settings to enable the database to work as efficiently as possible
- help to make decisions about long-term storage and archiving
- ensure that data is collected and used in compliance with legislation.

Data may form part of an overall **digital system**; find out more about this area in the leaflet on *Careers in digital systems*.

Data analysis

Data analysts work across a wide range of industries to collect, organise and study data of all types. They are concerned with turning data (raw material) into information that can be acted upon, e.g. to make decisions. They may work on projects to address a particular organisational need, problem or query, or analyse data on a regular basis (e.g. about customer buying patterns for sales and marketing purposes). A data analyst's role may include:

- clearly defining their client's or employer's requirements
- collecting and/or compiling data from a range of internal and external systems
- performing statistical analysis
- using a range of analytical techniques (such as data mining and modelling) to predict patterns and trends

- producing communication materials, such as reports, graphs or infographics
- presenting results to stakeholders
- making recommendations to solve specific problems or improve organisational performance.

You may come across jobs for **data managers, data modellers, information analysts, web analysts, digital analysts, data architects, big data/data engineers** and **data scientists**. Whilst jobs with different titles may be similar, and roles and responsibilities often overlap, there may be some differences. For instance, web analysts are concerned with analysing 'traffic' to websites (the number of users, how long they stay on each page or on the site overall, how they were viewing the information etc) whilst data scientists are particularly focused on the mathematical, scientific and technical aspects of data analysis. Data scientists often work on 'Big Data', i.e. data sets that are so large they have to be analysed computationally to reveal patterns, links etc. You can find out more about data science in the leaflet on *Statistics and data science.*

Any role involving data analysis calls for people who are numerical, logical, analytical and creative problem solvers. Increasingly, AI tools are being used to analyse data, so an interest in this area of technological development is likely to be useful.

Entry and training

Opportunities for data input staff, DBAs and data analysts exist in all areas of business, industry and in public services. They can work for financial services companies, large retailers, central and local government departments, media organisations, charities, hospitals and telecommunications companies, for example. There are also opportunities, particularly for data analysts, to work for specialist consultancies.

Although there are no set entry requirements for careers involving **data input**, some GCSEs at grades 9-4/A*-C are always useful. For details on courses in computing at various levels and their entry requirements, see the leaflet *Digital careers - an introduction to the work and training*. N.B. In England, the **T level** in digital business services is relevant to data roles and is available at certain schools and colleges.

Entry requirements for **DBAs** vary, but you are likely to need relevant experience and a good technical background. A suitable higher education qualification (**degree, HNC/D or foundation degree**) may be preferred or required for some jobs. **Data analysts** normally need a degree; employers may prefer to see a relevant analytical subject (e.g. computer science or maths), but opportunities may be available for those who can demonstrate the necessary skills in other ways. Specialist degree programmes in subjects such as data science, data analytics, business information systems and computer information systems are available as both an initial degree or as a postgraduate course. Some degree courses are offered on a **sandwich** basis, so would provide valuable work experience. Make sure that you research the content of courses carefully. Find out the destinations of past students, whether there are good links with employers etc.

Some employers offer formal **graduate training schemes**, especially for data analyst roles.

Once employed, training is on the job and through internal or external courses. It's possible to work towards qualifications - e.g. **BCS, The Chartered Institute for IT** offers programmes at a range of levels, including those leading to Certified Data Management Professional (CDMP). There are also relevant **postgraduate** courses.

Apprenticeships offer structured training with an employer and can provide an entry route into different areas and levels of work.

In England, relevant Apprenticeships include:

- level 3 for data technicians
- level 4 for data analysts
- Degree Apprenticeships for data scientists
- Degree Apprenticeships at levels 6 and 7 (masters degree level) for digital and technology solutions professionals/specialists (these offer specialisms in data analytics).

In Wales, the following may be relevant:

- level 3 for IT solutions development and support may be suitable for training to be a DBA
- level 4 for data analysts
- the digital Degree Apprenticeship has a pathway for training in data science.

To find out more about Apprenticeships, see:
www.apprenticeships.gov.uk
www.careerswales.gov.wales

What it takes

Depending on the type and level of role, to work with data you need:

- to be methodical and able to pay attention to detail
- technical knowledge
- a keen business sense
- teamworking skills
- to be flexible and adaptable
- organisational ability
- problem-solving skills
- good communication skills - to be able to explain complicated technical issues clearly.

Pay and prospects

There are no set pay scales and salaries vary depending on the nature and size of the organisation, its location and the individual's exact role and experience. As a guide:

- data input staff usually earn from around £16,000
- DBAs may earn from approximately £24,000 on entry; this can rise to £35,000 - much more for those with experience and increased responsibility
- starting salaries for graduates working in data analysis may be about £25-30,000; once experienced and in more senior or consultancy roles, incomes can reach £60,000+.

In some roles it may be necessary to move from one employer to another in order to gain promotion. DBAs and data analysts may move into other areas of computing, general management or training. For DBAs and data analysts with sufficient experience, self-employment (working for organisations as a consultant or on contract for a fee) is a possibility.

Further Information

DAMA UK - the UK chapter of The Data Management Association. An organisation offering members events, webinars, support with professional certification, mentoring etc.
www.dama-uk.org

BCS, The Chartered Institute for IT - has a specialist group for data management specialists.
www.bcs.org

For other organisations and websites that may be useful, refer to the leaflet *Digital careers - an introduction to the work and training*.

Related Leaflets

AD 01 Office work - an introduction
D 01 Digital careers - an introduction to the work and training
D 02 Tech and digital support
D 06 Software design and development
D 08 Cyber and information security
D 09 Tech and digital management
D 11 Creative and user-focused digital careers
D 12 AI and machine learning

D 13 Careers in digital systems
K 05 Archivist
K 08 Information science and related work
TC 02 Operational research
TC 03 Statistics and data science