

## Network Capacity Planning

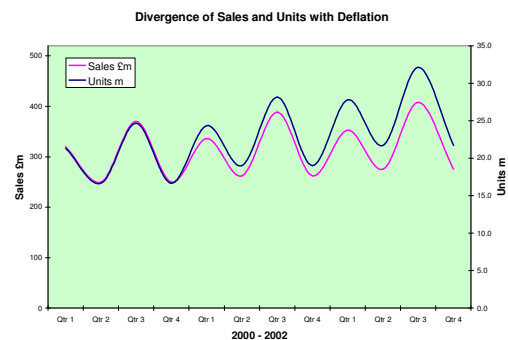


In today's fast-moving environment, even the most stable business can find itself affected by factors such as:

- Deflation in selling values
- Turnover increasing or decreasing faster than anticipated
- Fluid growth plans linked to property acquisitions
- Changes in sourcing policy affecting stock levels

While it is relatively easy to assess the impact of any one of these factors, it can become difficult when a number of changes are affecting the status quo in quick succession – particularly if spread across a number of warehouses or DCs.

An added difficulty is often that corporate business plans are in monetary value whereas warehouses handle either single selling units or transit units of some sort - and often more than one variety of each. A combination of increasing sales and deflation can look static in the business plan, but have quite a dramatic impact on operations – both physically and in terms of cost control pressures.



The process that we follow is to build a model that can be used to examine:

- Warehousing capacity requirements if current and expected changes are projected
- The impact of, for example, alterations to current stocking policies
- How best use can be made of current warehouses by maximising both their stock-holding and throughput abilities

### ***Model Design***

The model we build is tailored to a client's business, but will normally consist of two elements: forecast volume and operational capability of the network. These two elements are then compared to predict any problems, and indicate the extent to which these problems can be managed. The model is built so that both volume and capacity can be flexed according to, for example, growth plans and the volumes that it is possible to process in the different warehouse functions.

We go back to first principles wherever possible, calculating warehouse intake and despatch from sales and stock cover requirements, as these are the key business figures that ultimately drive the warehousing requirements.

Comparison of volume and capability				
Boxed (Ctns K)				
	Oct	Nov	Dec	Jan
Stock in warehouse	1173	1191	1255	988
Stockholding capability	1184	1184	1184	1184
Stockholding issues	99	101	106	83
Intake to warehouses	467	662	567	535
Intake capability	695	695	695	695
Intake issues	67	95	82	77
Despatches to stores	354	644	503	802
Despatch capability	800	800	800	800
Despatch issues	44	80	63	100

Red>100%, Yellow>95%, Green<85% of function capacity utilised

A key element of the design of the model is the ability to explore ‘what ifs’ and manipulate the volumes that the warehouses have to deal with – not necessarily altering the total volumes handled, but altering the timing. Model output is displayed as graphs of warehouse functions versus their capacities, and/or in a ‘traffic-lighted’ spreadsheet format.

The final output element is the conversion of all scenarios back into business plan format. So, having explored how the timing of volumes can be manipulated in order that the network will not ‘bust’, you are in a position to communicate what you require back to the rest of the business.

### ***Data Requirements***

The information required depends on the depth of a particular project. A broad-brush approach can often be as effective as a detailed study – particularly if answers are required quickly. Data requirements include:

- Sales and stock levels
- Mix of product types
- Handling rates
- Impact of number of SKUs on storage requirements
- Lumpiness within the period or month, and whether it is predictable or not
- Stock adjustments

We design data collection sheets in Excel that can be copied straight into the model, in order that your own staff can assist with the data collection process, which can often be a time-consuming element of an assignment.

### ***Typical Process***

Each project varies, but a typical example would involve these steps:

- Collect data, carrying out initial checks for consistency
- Design and build the model
- Calibrate the model by running it on historic data
- Model different scenarios
- Carry out sensitivity analyses to test the robustness of any assumptions
- Assess the impact of proposed changes on other areas of the business

