SECTION THREE – APPLYING PRODUCTIVITY RATIOS

This section covers:

- How to relate the delivery of goods and services to the human resource requirement
- Building in allowances for the working year

3.1 Relating the work needed to the resources required

In this Section we will look at the factors that lead us to decide on the "demand" for each job family, i.e. defining the units of delivery required of goods and services over periods of future time. These units should be defined by the business or strategic plan. However often in practice the "strategic plan" is confined to qualitative aspirations, especially in the public sector, and we return to this issue in section 4. But what we need to answer is: what is the human resource required to deliver a unit of work? This is the essence of WFP. We say "human resource" because it is not the same as "people" or headcount", as there are many variants of employment. For planning purposes we need to define a "unit of human resource" – and this is most commonly done as an "FTE" or "full time equivalent".

We have to start with *"front line" people* – such as manufacturing operators, service workers, installation engineers, salespeople and so on - and their typical resourcing ratios – sometimes referred to as *productivity* ratios., since they compare output with input.

We want to know that if the delivery requirement over a planning period changes by a factor of x, that we will need y more (or less) people. "x/y" is the productivity ratio. We have historical data available on these ratios. However we may also want to do some benchmarking, especially on standard industry wide comparators, such as labour hours per car produced. We may therefore set new targets on productivity as a result, or progressive improvement from period to period. We discuss productivity improvement more in the next section.
Some examples of these ratios would be:

- Nurses per occupied hospital bed
- Policemen per suburb
- Prison Officers per prisoner
- Sales people per £100K target
- Operators per shift per assembly line
- Labour hours to produce a car
- Doctors per 10,000 population
- Call centre operators per 100 customers or 100 sales calls
- Sales assistants per square metre of retail store
- Warehousemen per 100 units

In some cases a composite crew is defined per item of operational equipment e.g.

- Per aircraft, train or ship
- Per drilling rig

- Per public library
- Per chain style restaurant

Productivity will vary depending on both experience and training and normally we will just use an average figure. However this depends on the data available. This example from the NHS shows the differing outputs based on levels of expertise and qualification. It also carries the data right through to costs as well.

Figure 3.1. Output and Unit Cost per Level of Staff – NHS Nurses

4 year period	Average output/year	Average cost/year	Unit cost
Fully trained	6000	£ 22,000	£ 3.67
ACC (with training costs)	6700	£ 25,750	£ 3.84
ACC (no training costs)	6700	£ 24,000	£ 3.58
Trainee recruit	3625	£ 22,000	£ 6.07
Agency/overtime	6000	£ 22,000	£ 5.32

(Source: George Blair – project for an English hospital, 2007)

Ratios may also change based on the complexity of the work delivery. When provided with a productivity ratio we need to check that every "unit of delivery" is the same. For example hospital patients are classified according to the amount of nursing time they require. The sickest patient in intensive care, categorised as level 3, has one nurse per occupied bed and in addition a unit would have a supervisor. The next level down is high dependency, level 2, which has one nurse to two patients. Level 1 has one nurse to four patients during the day shift, though this can vary.

Front line employees then require *direct support*. They need supervision and management, technical and quality support, planners and monitors. For every, say 10, frontline people what kinds of support are needed and how much? These become job family: job family ratios and form part of our planning data. Here are some examples:

- Workers per supervisor
- Technical support engineers per salesperson
- Quality assurance people per assembly line
- Technicians per lecturer
- Schedulers per 100 operators

Finally we have "*second line support"* people – overheads such as Finance, IT, HR, PR, Legal and senior management. As small groups they may be evaluated and planned for individually. Many will be determined as a ratio to all employees (this is common in HR). Others such as IT will have a base level of support related to the number of systems or desk users, plus separately evaluated projects.

The numbers required in these families are often more determined by budgets, policies, priorities and projects than by the volume of goods or services delivered. R&D personnel e.g. will be directly dictated by the allocated investment.

3.2 Building in allowances for the working year

The business plan which dictates our demand for the delivery of good and services will be defined in terms of units per period. People, even “FTE’s”, do not work 24/7 however. Not only will we need to establish where shift patterns are needed, but individuals also are absent from delivering work through sickness, holidays and training. The definition of an FTE can take these into account in the productivity ratios used, but usually they do not.

In some job families, absences are just absorbed without any extra cover. Others, particularly front line jobs – and even more so those covered by union agreements – demand a “full complement”. Agencies providing temporary workers are often used. But for each job family this needs to be determined and either the definition or the number of FTE’s adjusted accordingly.

3.3 Past vs Future Ratios

The ratios as discussed above are often victims of cost cutting exercises and they are forced to change. This may or may not be productive – normally not so, as arbitrary changes irritate people and affect morale. The mantra “ we need to be more with less” may sound good to senior management but in practice is a hopeless aspiration unless it is accompanies by some serious re-engineering of processes.

Benchmarking may give us some clues as to whether our ratios are too little or too great, but there is always a problem in finding benchmarks of true comparative validity. However ongoing and systematic process and productivity studies are to be encouraged – studies which involve the managers and staff affected rather than being imposed.

As mentioned before strategic WFP will be looking forward to achieving an ideal “Greenfield state” which will have targets to be aimed for – even though it may take several periods to achieve them.

3.4 Planning for Productivity Change

Nations have as a key economic indicator “productivity improvement” and the UK has not shone in international tables in recent years. An effective strategic business plan should address this issue, and often does not. Do we plan on historic productivity ratios, or on improvements?

A constant reappraisal of the way things are done should take place, and there is great benefit in having a specialist department to help with this. It will normally pay for itself several times over.

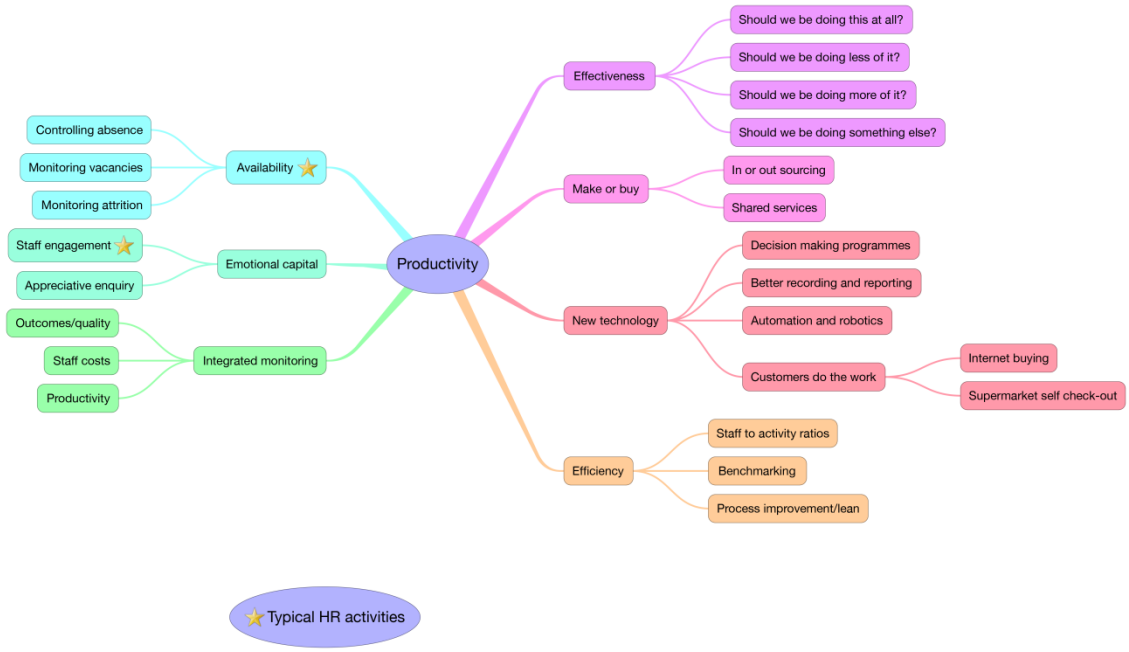
Productivity does come from people just working harder of course but that has its limits, and it should come from:

- Elimination of unnecessary work
- Introducing new systems and equipment
- Reducing absenteeism
- Redesigning working processes

- Job and organisation redesign

The following mindmap shows the various options with regard to improving productivity and which ones are those in which HR typically engages.

Figure 3.2. Productivity Mindmap



Process engineering developed an association with redundancies and gained a negative connotation. This was quite unjust, despite the fact that it may well lead to less people needed. Effective WFP plans ahead for this. Productivity changes are typically localised and therefore in terms of the dialogues discussed in 3.3 above it will be with operational managers.

3.5 Redesigning working processes

The purpose of process redesign is to improve quality and/or reduce cost by working differently. A number of approaches have been developed to assist in this, for example:

- "Lean" manufacturing – developed by Toyota
- "Work elimination and methods improvement" , developed by Procter and Gamble
- "Town Hall Meetings" – developed by GE
- Business Process engineering – developed and popularised by Michael Hammer and James Champy of MIT
- "Six Sigma" – developed by Motorola and widely adopted for both quality and cost improvements

This is a collaborative exercise where staff at all levels, involved in a specific process, can contribute. First steps include mapping a process and particularly looking at its interfaces – with customers, the public, or patients for example. For example, for a patient having a diagnostic test in a hospital, it would be a matter of

obtaining a copy of the letter sent to invite them to attend, turn up in the waiting room. Are there enough chairs? What is the role of the receptionist? How long do they wait before they are seen? By how many people are they seen and for what purpose? Can the diagnostic tests be speeded up so that a consultant can tell patient the results the same day in a one-stop clinic? .

3.6 Job Redesign

A natural output of process change will be changes to some staff roles – perhaps by increased delegation, by combinations of roles, creating new roles and eliminating redundant ones, or by upskilling. Examples include:

- Multi-skilled maintenance technicians with a skill base that includes both electrical and mechanical maintenance.
- Upskilling nurses so that they can do higher level medical diagnosis
- New IT roles to support new systems

All of these will affect the ratios discussed above which form the foundation of workforce planning.

An Example of Reskilling

Once a pathway has been redesigned, it is important to assess the implications for different staff groups, particularly those which may be problematic because they may be in very short supply or have a very high turnover. Figure 1 below shows the tasks in the process and who does them now (N) and who should do them in the future (F). This type of chart is sometimes called a swimming lane grid.

The example is taken from the NHS. Each Grade and Staff Group is shown separately, e.g. an assistant practitioner, practitioner or advanced practitioner would each have their own column. This often shows that a surprisingly large number of staff are involved in a particular episode of care. This means that it can be difficult to coordinate care due to the large amount of communication that is required, as the patient is "handed off" from one member of staff to another. In addition, this can lead to delay, as the next member of staff may be unavailable, as they might be involved with other patients or tasks. In the example below, some staff groups take on a new task, while others give up a task to another staff group. Where a task is core to their role, they continue to undertake it.

Figure 3.3 - Reviewing staff roles with a Swimming Lane Grid
Name of diagnostic group/pathway:

Task	Staff Group A	Staff Group B	Staff Group C	Staff Group D	Staff Group E	Staff Group F
Assessment	**N+F**	**N**	**N+F**	**N+F**	F	
Rehab			**N+F**	**N+F**	**N**	F
Modify medication	**N+F**	**N+F**	F	F		
Etc						

Key: N = now; F= future; N+F= now and in the future

Figure 3.4 - Key issues to address and questions to address

Issue	Question
Many staff are involved in one pathway	How can the pathway be simplified by involving fewer staff groups while multi-skilling others?
Where there are delays at particular points in the pathway	Who else could do this task, if they were adequately trained?
Where there are vacancies for a specific role	What tasks can be taken over from senior staff or those in short supply?
If staff take on additional tasks	What tasks could they pass on to others in order to free up their time?

NEXT STEPS

- Have you a “library” of productivity and “first line support” ratios?
- Do you have benchmarks for these?
- Where do the initiatives for productivity change come from?
- Have you people skilled in productivity study and process re-engineering?