Demand analysis

Effective leadership  Diverse workforce  Capable organisations and workforce  Employee conditions  APS Values

December 2011
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Module overview

This is one of eight modules in the Australian Public Service Workforce Planning Guide, designed to assist you with workforce planning in your agency or department. It can be read in isolation; however there are linkages to other modules, just as there are linkages between the elements of workforce planning.

This module provides guidance on how to determine what your organisation needs from its workforce—its capacity and capability to deliver its business outcomes now and into the future. It includes guidance on how to undertake scenario planning using demand forecasting techniques, to assist you to analyse the impact of alternative possible futures on your organisation’s workforce demand.

Read in conjunction with the ‘Supply analysis’ module, this module will help you to analyse potential workforce gaps, so you can develop targeted strategies and initiatives to mitigate these workforce risks.

The structure of the modules as they relate to the workforce planning process is depicted in Figure 1. The module you’re reading is highlighted in purple.

Figure 1. Modules in the APS Workforce Planning Guide.
Document management

Version history

<table>
<thead>
<tr>
<th>Version</th>
<th>Date</th>
<th>Author</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>December 2011</td>
<td>Australian Public Service Commission</td>
<td>First version</td>
</tr>
</tbody>
</table>
Glossary

**Capability**
The measure of an individual’s ability to achieve the tasks and objectives of their role through the application of skills, knowledge and attributes.

**Demand forecasting**
Used to understand future workforce demand implications against the business delivery scenarios identified through scenario planning, including the ‘known path’ or most plausible business direction.

Demand forecasting is not about predicting the future, which will always contain an element of uncertainty and be based on certain assumptions. It is about looking at likely futures to inform preparations for the future workforce your organisation requires to deliver business outcomes.

**Demographic information**
Gives insight into your current workforce, such as age and gender profiles, classification and location breakdowns, and workforce diversity balances.

**Employment type**
Way in which a worker is employed—for example, ongoing, non-ongoing, non-ongoing intermittent, part time, full time, contractor, consultant.

**Environmental scanning**
Process of looking more broadly at indicators of external labour supply and influences on demand to understand what the future may look like.

**Job capability set**
Skills, capabilities, qualifications and other attributes required for a particular job family, function or role (depending on the level of detail of workforce segmentation).

**Job family**
First tier in a hierarchy of job segmentation within a workforce.

The purpose is to split the workforce into logical and practical segments to allow for deeper workforce analysis.

A job family is a grouping of similar jobs at the highest level that usually consists of several job functions. For example, a possible job family might be ‘Administration, facilities and property’.

**Job function**
Second tier in a hierarchy of job segmentation within a workforce.

A job function is a subgroup of jobs within a job family that require similar skills, capabilities and knowledge. For example, one job function within the job family of ‘Administration, facilities and property’ might be ‘Executive assistants, secretaries and receptionists’.

**Job role**
Third tier in a hierarchy of job segmentation within a workforce. A job role is a subgroup of jobs within a job function that allows for further refining and grouping of required skills, capabilities and knowledge. For example, a job role within the job function of ‘Executive assistants, secretaries and receptionists’ (in the ‘Administration, facilities and property’ job family) might be ‘Personal/Executive assistants’.
<table>
<thead>
<tr>
<th><strong>Organisation</strong></th>
<th>Entity for which your workforce plan applies to. It may refer to a department, agency, division, branch, section or unit.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Qualitative</strong></td>
<td>Involving or relating to distinctions based on quality or qualities. Distinguished by a description in words rather than in numbers.</td>
</tr>
<tr>
<td><strong>Quantitative</strong></td>
<td>Expressible as a quantity or relating to, or subject to measurement. Distinguished by use of numbers rather than words.</td>
</tr>
<tr>
<td><strong>Scenario</strong></td>
<td>Description of a sequence of events, or situation, based on certain assumptions and factors (variables). Scenarios are used in estimating the probable effects of one or more variables, and are an integral part of situation analysis and long-range planning. Definition adapted from <a href="http://www.businessdictionary.com/definition/scenario.html">http://www.businessdictionary.com/definition/scenario.html</a>.</td>
</tr>
<tr>
<td><strong>Scenario planning</strong></td>
<td>Method that helps your organisation understand the possible and plausible future business directions and scenarios that may eventuate so as to make flexible long-term plans and identify possible contingency plans.</td>
</tr>
<tr>
<td><strong>Skill</strong></td>
<td>An ability, acquired through deliberate, systematic and sustained effort, through training and/or experience, to perform tasks within a role that require specific cognitive, technical and/or interpersonal skills.</td>
</tr>
<tr>
<td><strong>Trend information</strong></td>
<td>Based on data from the past that helps you predict how your current workforce might change over time. Examples include recruitment, secondments, terminations, vacancies, length of service and leave.</td>
</tr>
<tr>
<td><strong>Workforce affordability</strong></td>
<td>The number of people—in full-time equivalent (FTE)—an organisation can afford, who have the requisite skills and capabilities to deliver business outcomes.</td>
</tr>
<tr>
<td><strong>Workforce capability</strong></td>
<td>What the workforce can do. It refers to the skills and knowledge of the workforce, including elements such as its ability to be innovative. Workforce capability can be used to describe what is in existence, including latent capability (that is, capability not currently being used), what is predicted may be required in the future and any gap between the two.</td>
</tr>
<tr>
<td><strong>Workforce capacity</strong></td>
<td>How much the workforce can do. Refers to the ‘availability’ of the workforce to do work, for instance the absolute numbers of staff available with the necessary skill sets (including their level of the skills) and other elements such as levels of absenteeism (or presenteeism). When used to describe the absolute numbers of staff, the element of employment type (for example, ongoing, non-ongoing, full time, part time) also needs to be considered. The dimension of workforce capacity can be used to describe what is in existence, what may be required in the future and any gap between the two.</td>
</tr>
</tbody>
</table>
The other component of workforce capacity is the workforce’s ‘performance’, which includes elements such as staff engagement, motivation and discretionary effort.

**Workforce demand**
The workforce an organisation needs to perform its functions and achieve its business objectives, now and into the future.

Workforce demand is defined in terms of workforce capability, workforce capacity and the alignment of the workforce to the functional business delivery of the organisation (structure).

**Workforce management plan (immediate issues)**
Deals with immediate and specific workforce issues (such as restructure, conclusion of a significant project or a recruitment campaign for specific skills) and identifies actionable strategies for managing the workforce issues.

An organisation may have a number of workforce management plans if it’s dispersed across a number of geographic locations or business areas.

**Workforce plan**
Document you produce to capture the key factors you’ve considered in developing the strategies and initiatives to mitigate your workforce risks. Throughout this guide, the term is used broadly to describe either a single workforce plan or multiple workforce plans—strategic workforce plan(s), operational workforce plan(s) and/or workforce management plan(s)—depending on the needs of your organisation.

**Workforce plan, operational (12 to 18 months)**
Usually covers the next 12 to 18 months and identifies actionable strategies to address a specific workforce gap in the short to medium term.

**Workforce plan, strategic (three-plus years)**
Usually covers a three to five-year time horizon, with many organisations focusing on a four-year time horizon aligned to Portfolio Budget Statements. However, if the lead time to fill critical job roles is longer than three to four years, the forecast period may need to extend beyond this.

Seeks to address high-level trends and developments that will affect the availability of the workforce required to deliver organisational outcomes. A suite of actionable strategies will be articulated to mitigate the workforce risks identified.

**Workforce planning**
A continuous business planning process of shaping and structuring the workforce to ensure there is sufficient and sustainable capability and capacity to deliver organisational objectives, now and in the future.

To be effective, workforce planning needs to be integrated into an agency or department’s strategic planning framework and incorporate strong governance mechanisms so it can be used to clearly identify the human resource (HR) strategies required to continuously deliver the right people—that is, those with the skills and capabilities necessary for the required work—in the right numbers, in the right place, at the right time.
<table>
<thead>
<tr>
<th><strong>Workforce segment</strong></th>
<th>A specific job family, job function or job role within your organisation.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Workforce structure</strong></td>
<td>Refers to how the workforce is organised within programs and functions to deliver expected business outcomes.</td>
</tr>
<tr>
<td><strong>Workforce supply, external</strong></td>
<td>Anyone who does not work for your organisation but could do so, now or in the future.</td>
</tr>
<tr>
<td></td>
<td>External workforce supply is used to reconcile demand and supply if internal workforce supply is not sufficient and/or cannot be developed to meet demand.</td>
</tr>
<tr>
<td><strong>Workforce supply, internal</strong></td>
<td>Everyone in the current workforce. It should also consider future movements in and out of the workforce. This includes full time, part time, casual and contracted employees who are working for or supplying services to the agency or department.</td>
</tr>
<tr>
<td></td>
<td>Supply is defined in terms of skills, capabilities and numbers.</td>
</tr>
</tbody>
</table>
### Symbols

Below is a key to the symbols used in this module, to draw your attention to things that might help you along the way, as you progress workforce planning in your organisation.

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>📀</td>
<td>Documents to consult The list is not exhaustive and you should complement these with documents that are specific and relevant to your organisation.</td>
</tr>
<tr>
<td>👤</td>
<td>People to consult The list is not exhaustive and the right people to consult may vary depending on your organisation.</td>
</tr>
<tr>
<td>📁</td>
<td>Templates Generic templates outlining the basic information required and a suggested format for collecting and structuring this information. Templates are referred to by their number and title.</td>
</tr>
<tr>
<td>📝</td>
<td>Documents to produce Documents you may wish to produce at a particular stage of workforce planning. These may eventually be collated to form part of your final workforce plan. Templates are provided for some of these.</td>
</tr>
<tr>
<td>🔍</td>
<td>Key questions Key questions you may need to answer at a particular stage of workforce planning. These lists are not exhaustive and you may want to think about more questions that are specific to your organisation.</td>
</tr>
<tr>
<td>💡</td>
<td>Ideas Ideas you may wish to think about along the way.</td>
</tr>
<tr>
<td>📚</td>
<td>Information Information, facts and definitions that may help you undertake workforce planning.</td>
</tr>
<tr>
<td>🔗</td>
<td>Section outputs Summary of the documents you may have considered and produced at a particular stage of workforce planning, and guidance on where they fit in relation to the development of your workforce plan. Also provides context on how you’re progressing through the workforce planning process.</td>
</tr>
</tbody>
</table>

### Demand analysis

Demand analysis must consider current and future workforce requirements. Consulting managers should give you a good understanding of current demand, but a wider environmental scan combined with more consultation will be required to forecast future demand.

The key to demand analysis is adequately answering the following questions:

- What does your organisation need from its workforce—capacity and capability—to deliver its business outcomes now and into the future?
- Where does your organisation need its workforce to be located?
- At what time points is the workforce is needed?
Demand analysis is about understanding the future business direction of your organisation and what its workforce needs are so it can deliver against its goals. Your workforce needs should be defined in line with the workforce segmentation you have undertaken (refer to the ‘Segmenting your workforce’ module).

Researching the strategic direction of your agency or department will help provide the context for workforce planning and, in particular, demand analysis. Annual reports will provide information on your organisation’s past activities, while budget papers, strategic plans and business plans will reveal where you’re headed. The portfolio budget statement will provide the future funding framework for the current year and the three out years, which will give you insight into the workforce funding constraints and workforce affordability your organisation needs to consider in its future planning.

Understanding your organisation also involves talking to the people who set the vision for and plan for your organisation’s future. Example strategic business questions are provided in the key questions under ‘Current demand’.

If your organisation is further progressed with workforce planning you may be able to express workforce demand in detail, in quantitative and qualitative terms. Organisations in the initial stages of implementing workforce planning may only be able to express workforce demand qualitatively, in general terms.

**Current demand**

To assess current workforce demand, you must understand your organisation’s core business and what its outcomes and outputs are. These should ideally match the outputs identified in Template 4, if you have used this. In some instances, this might be hard to clearly identify, particularly for enabling roles, and this is acceptable. Outputs can, in turn, be linked to job functions or job roles, providing you with the link between the business outcomes and outputs and workforce demand.

By consulting with line managers, you should obtain an understanding of your current workforce demand, which will enable you to populate a demand analysis table (Template 6). Depending on the availability of information and the understanding managers have of the workforce, Template 6 can be populated with...
qualitative or quantitative data. In its simplest form, current demand is sometimes easiest to determine by adding together the employees you have and your funded employee shortages (as justified by line managers) and commensurate skills and capabilities required. However, this may be a lost opportunity to validate current workforce requirements against operational objectives.

**Key questions: Current demand**

- What is your organisation required to deliver in terms of outcomes, outputs and services?
- Are you delivering all of these outcomes, outputs and services on time and within budget?
- If not, is this because you lack specific capabilities? What are these capabilities? What is the funded full-time equivalent? Is it sufficient? Note: Additional demand should be well justified so it’s clear it’s a genuine need, not just a way of reducing workload. Below are some questions you could ask to justify additional demand:
  - What are the potential budget constraints to obtaining these?
  - Can this additional workforce demand be reduced by changing the workplace infrastructure (for example, business processes or Information Technology support systems)?
  - Can this additional workforce demand be reduced by changing the workplace structure?
  - Are there functions you consider should be discontinued and are there new functions you should be creating?
  - Are your current jobs correctly designed? What new skill sets and/or job roles are important to achieve business success? What skills deficits are evident today?
- If you had the opportunity to set up your business area from scratch, how would you structure it? How many people, in what job roles, at what levels, in which locations, and with what capabilities? (zero-based demand)

At the end of this process, you should be able to present a picture, either in words or a combination of words and numbers that adequately describes your current workforce needs.

**Future demand**

Once you have an understanding of current workforce demand, you need to understand how it might need to change to meet the future business direction of your organisation over the forecast period.

Due to the inevitable uncertainties in forecasting future demand, workforce planning at this stage often begins with scenario planning. The aim of this is to identify a number (usually no more than three) of plausible future business scenarios (combinations of possible events) that will vary in their impact on workforce demand. Some of the most common business scenarios faced by the public sector may include:

- implementation of a new piece of legislation requiring an internal organisational restructure
- introduction of a new policy proposal
- machinery of government change due to a new policy proposal
- new policies arising out of an unexpected election outcome
- ceasing of a new policy proposal
- ceasing of function due to a change in who is responsible for business (privatisation of a service or function)
- reduction in funding resulting in a reduction in workforce affordability.
From these scenarios—and any others you identify by examining internal and external drivers (Table 1 and Table 2)—you will determine the most plausible ones you will consider in your workforce plan. From these plausible scenarios you will identify the scenario which will be your ‘known path’ and this will be the main focus of your workforce plan. The other plausible scenarios will become your ‘alternative futures’.

You will need to analyse the impact on future workforce demand of your known path as well as your alternative futures, using one of, or a combination of, the demand forecasting techniques below. By analysing the impact of the alternative futures, an organisation can respond quickly to rapid changes from the known path to the alternative future. Organisations will often look at possible scenarios that would take them above and below their known path for the number of staff and mix of capabilities required. In addition to the impact on workforce demand, the techniques will help you assess the likelihood, consequence and mitigation strategy for each alternative future (see Template 7) identified.

You need to consider three things when analysing your known path and alternative futures:

- demand forecasting techniques (how you project the required workforce into the future)
- internal demand drivers (what factors within your organisation will impact workforce demand)
- external demand drivers (what factors outside of your organisation will impact workforce demand).

**Demand forecasting techniques**

Demand forecasting techniques are used to predict future workforce demand, including the types of skills and capabilities needed (generally against an identified job family, job function or job role). These techniques fall into two categories:

- **Qualitative forecasting**
  - functional (or nominal) group exercises
  - Delphi Technique
  - structured interview
  - focus groups

- **Quantitative or statistical forecasting**
  - regression analysis
  - decision analysis
  - zero-based staffing
  - staffing ratio/Performance.
These techniques are discussed in more detail at Appendix A. How they are used within an organisation is generally driven by the scale and complexity of the organisation, the quality of the data and the external environment it works within. You should choose the techniques that are most feasible, given your organisation’s level of readiness to undertake workforce planning, or which best suits your organisation.

Internal and external drivers are separated in the sections below, but for forecasting purposes it’s easiest to examine them simultaneously.

**Idea: Future demand forecasting**

**Key questions: Future demand**

**Business direction**

- What is the strategic direction of your organisation over the next 1, 2, 3 and 4 plus years?
- What impact does this have on the work you will undertake in the future (next 1, 2, 3 and 4 plus years)?
- What new activities will be incorporated in the budget? What activities will cease?
- What particular outputs will be affected by this change? How will you deliver these outputs?

**Workforce demand**

- What implications does this have for the workforce (capacity, capability, location, functional alignment to business delivery)?
- What new skills or job roles will become important to achieve business outcomes?
- What job functions or skills will no longer be required?
- Will the way the work is currently done change?
- How will changes in technology affect your work?

**Internal demand drivers**

You will need to look at internal drivers and what implications these have for future workforce demand. Organisational plans, together with information from your executive management, will provide you with information on future organisation priorities and work requirements. You will need to translate this information into workforce demand and job capability requirements. As stated earlier, this is not about predicting the future, but about making informed assumptions about what may happen and what effect this will have on your workforce.

Table 1 outlines some potential internal drivers of workforce demand. It’s also important to think about how changes in the environment may impact on the agency or department as a whole, as this may indirectly impact on your organisation.
Table 1. Internal drivers of future workforce demand

<table>
<thead>
<tr>
<th>Internal drivers</th>
</tr>
</thead>
<tbody>
<tr>
<td>• strategic plans</td>
</tr>
<tr>
<td>• business plans</td>
</tr>
<tr>
<td>• budget forecasts/Portfolio budget statements</td>
</tr>
<tr>
<td>• planned new programs</td>
</tr>
<tr>
<td>• planned new technology</td>
</tr>
<tr>
<td>• planned agency or department restructure</td>
</tr>
<tr>
<td>• current and planned service arrangements</td>
</tr>
<tr>
<td>• organisational performance</td>
</tr>
<tr>
<td>• customer feedback</td>
</tr>
<tr>
<td>• white papers or reforms</td>
</tr>
</tbody>
</table>

**External demand drivers**

Table 2 lists external demand drivers and gives examples of the channels through which these may affect your organisation. You should examine relevant government, industry and research publications, and news articles that indicate how the external drivers will change over the coming year or two, and how this will affect your workforce. Executive management are often a rich source of knowledge on the external environment and the changes it’s undergoing, so don’t forget to consult them.

The external demand drivers in Table 2 have been grouped using the PESTEL model which distinguishes between political, economic, social, technological, environmental and legal factors.
### Table 2. External drivers of future workforce demand

<table>
<thead>
<tr>
<th>External drivers</th>
<th>Examples</th>
</tr>
</thead>
</table>
| Political        | • government direction  
                  | • future service demand  
                  | • taxation  
                  | • new legislation  |
| Economic         | • financial environment (Australian and global), interest rates  
                  | • unemployment  
                  | • exports and imports  
                  | • industry demand for products and services  |
| Social           | • nature of work  
                  | • ageing population  
                  | • geographic population shift  
                  | • attitudes to work  
                  | • income distribution  
                  | • client-focused service delivery  |
| Technological    | • electronic service delivery  
                  | • service access  
                  | • communication channels  
                  | • innovation  |
| Environmental    | • turning activities green  
                  | • carbon tax  
                  | • global warming  |
| Legal            | • emerging cases  
                  | • change in attitude  
                  | • legislation and regulations  
                  | • health and safety  
                  | • employment law  |

**Information: Supply as a future demand driver**

Ideally, demand is completely determined by business drivers, rather than by supply. However, if a significant shortage in a particular skill is predicted to grow in the future, your organisation may have to alter demand accordingly (that is, change the way you provide a service so the skills and capabilities required change as well).

**Section outputs**

- **After considering the information and suggested outputs in this section,** you should be able to produce a demand analysis document; a picture, either in words or a combination of words and numbers, to adequately describe what your projected future workforce will look like along a ‘known path’ and at least two alternative possible and plausible paths.

- **Workforce plan.** The information contained in your demand analysis document will inform the ‘Demand analysis’ section of your workforce plan. Refer to Appendix B of the ‘Workforce planning explained’ module.
Appendix A: Scenario planning and demand forecasting techniques

Scenario planning

Due to the inevitable uncertainties in forecasting future demand, workforce planning often begins with scenario planning. The aim of scenario planning is to identify a number (usually no more than three) of plausible future scenarios (combinations of possible events) that will vary in their impact on workforce demand.

Scenario planning will provide you with the most likely scenario—the ‘known path’ or ‘baseline’—and give you ‘alternative futures’ you should analyse. Alternative futures are particularly relevant for the public sector, where discontinuities are frequent and election outcomes can significantly change strategic direction and programs delivered.

Scenario planning is often undertaken in a workshop or a series of workshops with executives and managers, but you can also use one of the qualitative demand forecasting techniques explained in the section on Demand forecasting techniques. The basic steps of scenario planning include:

1. Identifying and setting dimensions against key enduring drivers that will have a measurable impact on a future environment (for example, Budget—dimensions may include no change, trending increase, trending decrease).

2. Combining these enduring drivers and their dimensions to form logical potential future scenarios.

3. Prioritising three high-level scenarios that your organisation is likely to find itself in, within your specified forecast period. You may need to determine the likelihood of all your scenarios, as this will help you choose the ones to prioritise.

Figure A1 depicts a potential future scenario, including internal and external drivers. Although this scenario contains a number of events, a scenario can be made much simpler by reducing the number of events within it.
Table A1 provides example factors to consider when developing scenarios, while Table A2 provides example considerations of the relevance of business needs to workforce planning, over time.

In refining and filtering your scenarios, move from what is possible, to what is plausible, to what is likely.

**Figure A1. Scenario example**

<table>
<thead>
<tr>
<th>INTERNAL</th>
<th>EXTERNAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>New mandated changes with a move to insourcing</td>
<td>Development of the single government access card</td>
</tr>
<tr>
<td>Merger of three divisions within agency</td>
<td>Resources boom continues and possibly steps up</td>
</tr>
<tr>
<td>Abrupt departure of Chief Executive Officer</td>
<td>Increase in number of immigrants</td>
</tr>
<tr>
<td>Partial relocation to remote areas</td>
<td>Unexpected election outcome</td>
</tr>
<tr>
<td>Implementation of new information management system</td>
<td>Tertiary educational establishments drastically reduce their yearly intake</td>
</tr>
<tr>
<td>Agency recruitment strategy fails</td>
<td>Interest rate hike</td>
</tr>
<tr>
<td>Fall in customer satisfaction levels</td>
<td>Decreased demand for services</td>
</tr>
<tr>
<td>Organisational restructure</td>
<td>Decreased demand for services</td>
</tr>
<tr>
<td>Number of transactions</td>
<td>Resources boom slows</td>
</tr>
</tbody>
</table>

Once you have identified your known path and alternative futures, you will need to use a demand forecasting technique to determine the likelihood, consequence and impact on the workforce of element of each scenario.
Table A1. Example factors to consider when developing scenarios

<table>
<thead>
<tr>
<th>Factors</th>
<th>Example factors</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Social</strong></td>
<td>Demographic changes which:</td>
</tr>
<tr>
<td></td>
<td>• alter community needs and expectations</td>
</tr>
<tr>
<td></td>
<td>• alter the profile of an organisation's workforce.</td>
</tr>
<tr>
<td></td>
<td>(For example: lifestyle trends, demographics, consumer attitudes and opinions, educational changes, values, mobility, ethical issues and ageing population)</td>
</tr>
<tr>
<td><strong>Technological</strong></td>
<td>Changes in technology which:</td>
</tr>
<tr>
<td></td>
<td>• improve service delivery</td>
</tr>
<tr>
<td></td>
<td>• simplify business processes.</td>
</tr>
<tr>
<td></td>
<td>(Consider: competing technology development, research funding, associated and/or dependent technologies, replacement technology solutions, maturity of technology, technology legislation, innovation potential, and what technological trends are likely to impact)</td>
</tr>
<tr>
<td><strong>Economic</strong></td>
<td>Budgetary impacts resulting in increase or decrease in:</td>
</tr>
<tr>
<td></td>
<td>• operating budget</td>
</tr>
<tr>
<td></td>
<td>• costs</td>
</tr>
<tr>
<td></td>
<td>• anticipated workload.</td>
</tr>
<tr>
<td><strong>Ecological and Environmental</strong></td>
<td>Ecological and environmental issues</td>
</tr>
<tr>
<td></td>
<td>(For example: seasonal or weather issues and climate change)</td>
</tr>
<tr>
<td><strong>Political</strong></td>
<td>External issues driven by:</td>
</tr>
<tr>
<td></td>
<td>• government policy and initiatives</td>
</tr>
<tr>
<td></td>
<td>• legislative change</td>
</tr>
<tr>
<td></td>
<td>• government term and change.</td>
</tr>
<tr>
<td></td>
<td>(The aim could also be to obtain an understanding of what work is not likely to change, that is, what will we certainly have to continue to do?)</td>
</tr>
<tr>
<td><strong>Regulatory</strong></td>
<td>Issues driven by:</td>
</tr>
<tr>
<td></td>
<td>• regulatory bodies and processes</td>
</tr>
<tr>
<td></td>
<td>• restructure</td>
</tr>
<tr>
<td></td>
<td>• change of management</td>
</tr>
<tr>
<td></td>
<td>• aggregation of functions</td>
</tr>
<tr>
<td></td>
<td>• governance.</td>
</tr>
</tbody>
</table>
### Table A2. Relevance of business needs to your business and financial planning over time

<table>
<thead>
<tr>
<th>Are the following business needs relevant to your business and financial planning ...?</th>
<th>... in the next 12 months? (Briefly describe)</th>
<th>... in the next 3 years? (Briefly describe)</th>
<th>... in the next 5 years? (Briefly describe)</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Expansion of business activities</td>
<td>Stable</td>
<td>Possible new work in regional areas</td>
<td>Stable</td>
</tr>
<tr>
<td>• Changes in funding</td>
<td>Stable</td>
<td>Minor decrease</td>
<td>Major decrease</td>
</tr>
<tr>
<td>• De-emphasis or discontinuation of any business activities</td>
<td></td>
<td>Move to whole-of-government shared approach</td>
<td>Whole-of-government approach to information and communications technology</td>
</tr>
<tr>
<td>• New business, work, products or services</td>
<td>Change of service offer</td>
<td>Increased focus on workforce participation requiring focussed intervention</td>
<td>Change in service channels Change in policy</td>
</tr>
<tr>
<td>• Changes in customer expectation (or community needs)</td>
<td>Increased expectations from government</td>
<td>Increased mobility and technology based interaction</td>
<td></td>
</tr>
<tr>
<td>• New technologies or applications</td>
<td>Increase in new technologies</td>
<td>Increase in demand for data sharing across government</td>
<td></td>
</tr>
<tr>
<td>• Changes in operating methods or productivity improvements</td>
<td>Increase in shared service arrangements</td>
<td>Online, self service delivery</td>
<td>Stable</td>
</tr>
<tr>
<td>• Continuous improvement processes</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Changes in administrative, information or quality control systems</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Changes in management or organisational structure</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Changes to industrial agreements and/or instruments</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Other</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Demand forecasting techniques

Qualitative forecasting

Qualitative approaches to forecasting are subjective and have the potential for human bias. However, they are usually more readily available than quantitative approaches, as there is no need for statistical experts or specialist software. Qualitative approaches generally involve selected supervisors, managers and subject matter experts within your organisation who are best placed to understand your planned future business requirements and their impact on the organisation. Additional expertise or advice, internal and/or external, may also be required to facilitate these approaches so a wider environmental view can be obtained to assess future scenarios. The balance of complexity with the range of requirements for human capital intelligence will drive how qualitative forecasts are obtained.

Popular methods used for qualitative forecasts are described below and include functional (nominal) group exercises, the Delphi Technique, structured interviews and focus groups.

Functional (nominal) group exercises

Functional group exercises or nominal group exercises are generally used for developing a large number of ideas in a short time. Functional groups of staff co-located at a meeting use their collective understanding of an organisation’s drivers, and current and future requirements, to determine the potential impacts on workforce elements. In essence, the technique is designed to elicit opinions, aggregate judgements and obtain priority ranking on options presented to the group by participants. The aim is to increase the rationality, creativity and efficacy of the ideas generation process.

The technique is often used:

- to generate many new ideas rapidly
- to ensure everyone is heard
- when there is concern that some people with important information may not be vocal
- to build consensus
- when there is conflict within the group that degrades its ability to formulate ideas independently

Functional group exercises are facilitated. They work best when ideas are presented in a format that allows the group to think about the idea before commenting on it. Once all the ideas are collated then discussion begins, based on the time participants have had to reflect on the options outlined by the group.

The advantage of this technique is that it avoids two common problems caused by group interaction. Individuals may be reluctant to participate and offer ideas for fear of being criticised, and individuals may be reluctant to generate conflict in a group by offering ideas that are contrary to those already offered. The technique overcomes these problems by ensuring equal participation and allowing ideas to be put forward without commentary.
The format of functional or nominal group exercises can vary but generally follows these five steps:

- **Step 1: Introduction and explanation.** The facilitator welcomes participants and explains the purpose and procedure of the meeting.

- **Step 2: Silent generation of ideas.** The facilitator provides each participant with a sheet of paper with the question to be addressed, and asks them to write down all the ideas that come to mind when considering the question. During this time, the facilitator asks participants not to consult or discuss ideas with others. This stage lasts approximately 10 minutes.

- **Step 3: Sharing ideas.** The facilitator invites participants to share the ideas they have generated, and records each idea on a flip chart, using the words spoken by the participant. This round robin process continues until all ideas have been presented. There is no debate about ideas at this stage and participants are encouraged to write down new ideas that arise from what others share. This process ensures all participants get an opportunity to make an equal contribution and provides a written record of all ideas generated by the group. This stage may take 15 to 30 minutes.

- **Step 4: Group discussion.** Participants are invited to seek verbal explanation or further details about any of the ideas their colleagues have produced that may not be clear to them. The facilitator's task is to ensure each person is allowed to contribute and that discussion of all ideas is thorough, without spending too long on a single idea. It's important to ensure the process is as neutral as possible, avoiding judgment and criticism. The group may suggest new items for discussion and combine items into categories, but no ideas should be eliminated. This stage lasts 30 to 45 minutes.

- **Step 5: Voting and ranking.** This involves prioritising the recorded ideas in relation to the original question. Following the voting and ranking process, immediate results in response to the question are available to participants so the meeting concludes, having reached a specific outcome.

**Delphi Technique**

The Delphi Technique is a structured, question-based technique used to guide subject matter expert input into the forecasting process. Delphi is predominantly used when organisations have a definitive understanding of the types of information they wish to acquire. Generally, the Delphi Technique poses questions, which are iteratively refined and prioritised, until a common viewpoint is established. Usually, the participants involved remain anonymous during and after the technique has been used by the planning group. This prevents the authority, personality or reputation of some participants from dominating others in the process and allows participants to be freed (to a certain extent) from their own personal biases. It also helps to minimise the ‘bandwagon’ or ‘halo effect’, allows for free expression of ideas and opinions, and encourages open criticism of ideas, free from fear of repercussions.

The questions may be drawn to extract information about the following planning elements:

- **Organisational direction:** corporate objectives, budgetary constraints, time frames, business efficiency targets, programs, projects and new policy.
- **Environmental factors:** political, economic, environmental, social, technological.
- **Internal labour:** workforce structures, job families, occupations, skills and capabilities, work and business processes, reward and remuneration, staff movements, demographics and geography.
- **External labour:** labour market trends, recruitment sources and pipelines, employment types and competition.
The Delphi Technique process involves:

- **Step 1: Defining the problem.** Identify the problem and describe it in a way that is easy to understand. This can be in various forms, from a questionnaire to broad and open questions. Generally, these questions are based on a lack of available information about the problem at hand, which you wish to identify and clarify a position on, or where there is information available but you wish to clarify whether this information is relevant from an organisational perspective (that is, how this information is contextualised specifically to your organisation).

- **Step 2: Distributing the problem** (the list of clarifying questions). Establish your Delphi Team and provide them with the first round of questions. Ideally, you will need a team of between 12 and 20 people, although larger virtual teams may be required for larger organisations. Make sure there is clarity around the requirements of participants’ responses (that is, short dot points rather than heavy text).

- **Step 3: Collating first round responses.** Collect the responses and collate these into a single anonymous list of observations or set of lists.

- **Step 4: Distributing the collation.** Send the collation back out to the Delphi Team with the request to rank or prioritise each item on a given scale (for example, 1 to 10). You may wish to provide more opportunity for the Delphi Team to comment at this stage.

- **Step 5: Refine.** Repeat until there is a clearly defined outcome of the analysis.

**Structured interviews**

In its simplest form, a structured interview involves one person (the interviewer) asking another person (the respondent) a list of predetermined questions designed to elicit responses on a preselected topic. The interviewer is allowed to explain things to the interviewee and the process is designed to be collaborative. The aim is not to test the respondent but to generate ideas and information for a specific purpose, such as future planning.

The technique’s tenet is to ensure all interviews are conducted using the same questions, set in the same order. This is designed to facilitate answers that can be reliably aggregated and therefore be used to make comparisons between sample groups or time periods. This is useful for forecasting because an organisation can compare responses over time and build a historical picture of how respondents feel about future issues.

The method has strengths and weakness, which are outlined in Table A3.
### Table A3. Strengths and weaknesses associated with structured interview technique

<table>
<thead>
<tr>
<th>Strengths</th>
<th>Weaknesses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Enables the interviewer to examine the level of understanding a respondent has about a particular topic—usually in slightly more depth than with a postal questionnaire.</td>
<td>Can be time consuming if the sample group is large (this is because the interviewer or their representative needs to be present to undertake the structured interview).</td>
</tr>
<tr>
<td>Can be a powerful form of formative assessment. That is, it can be used to explore how a respondent feels about a particular topic.</td>
<td>Quality and usefulness of information is highly dependent upon the quality of the questions asked. The interviewer cannot add or subtract questions for subsequent interviews.</td>
</tr>
<tr>
<td>Structured interviews can also be used to identify respondents whose views you may want to explore in more detail.</td>
<td>Requires a substantial amount of pre-planning.</td>
</tr>
<tr>
<td>All respondents are asked the same questions in the same way. This makes it easy to repeat (‘replicate’) the interview. In other words, this type of research method is easy to standardise.</td>
<td>Format of questionnaire design makes it difficult for the interviewer to examine complex issues and opinions. Even where open-ended questions are used, the depth of answers the respondent can provide tends to be more limited than with almost any other method. If you have multiple interviewers, gaining a consistent interpretation of the content of each interview can be difficult.</td>
</tr>
<tr>
<td>Provides a reliable source of qualitative data.</td>
<td>Limited scope for the respondent to answer questions in detail or depth.</td>
</tr>
<tr>
<td>Limited scope for the respondent to answer questions in any detail or depth.</td>
<td>Possibility that the presence of the interviewer may influence the way a respondent answers various questions, thereby biasing the responses.</td>
</tr>
<tr>
<td>Relatively quick and easy to create code and interpret (especially if closed questions are used).</td>
<td>A problem common to both postal questionnaires and structured interviews is the fact that by designing a ‘list of questions’, an interviewer has effectively decided—in advance of collecting any data—the things they consider to be important and unimportant.</td>
</tr>
<tr>
<td>Formal relationship between the interviewer and the respondent, with the latter knowing exactly what is required from them in the interview.</td>
<td></td>
</tr>
<tr>
<td>Interviewer does not have to worry about response rates, biased (self-selected) samples, incomplete questionnaires and the like.</td>
<td></td>
</tr>
</tbody>
</table>

Sample questions for forecasting future workforce requirements may include:

- Is there any known current over or under supply of employees, skills, capabilities?
- What might the impact of future business direction be on workforce numbers, skills, capabilities?
- Are projects or programs already staffed or will they require additional labour hire to fill workforce gaps?
- Does workforce future forecasting account (as much as is reasonably practicable) for changes that will affect the agency or department, such as changes in government, changes in industrial relations policy, population growth or migration patterns and the availability of skilled workers?
• If this function was not yet staffed, how would you structure and fill roles with the four-year outcome in mind? (zero-based questioning)

Focus groups

Focus groups are designed to elicit responses from a preselected group of participants, to establish their perceptions, opinions, beliefs, attitudes and ideas about or toward a particular topic. Questions are asked in an interactive group setting, where participants are free to talk with other group members.

Focus groups allow interviewers to study people in a more natural setting (compared to a one-on-one interview). They may be combined with other qualitative techniques, such as the structured interview, to gain a detailed understanding about how a group of participants feel about the chosen topic. Through facilitated discussion, participants share their perceptions on an issue(s) and provide qualitative feedback. Emphasis is on getting a picture of the organisation from the perspective of the participants.

The focus group technique is useful due to its low cost, the speed with which one can get results, and research can be easily conducted with a larger sample size. Focus groups also have a high apparent validity—the idea is relatively easy to understand and the results are credible.

There are various focus group types:

• two-way focus group, where one focus group watches another focus group and discusses the observed interactions and conclusion
• dual moderator focus group, where one moderator ensures the session progresses smoothly, while another ensures all topics are covered
• ‘duelling moderators’ focus group, where two moderators deliberately take opposite sides on the issue under discussion
• respondent moderator focus group, where one respondent is asked to act as the moderator temporarily
• client participant focus group, where one or more client representatives participate in the discussion, covertly or overtly
• mini focus group, where groups comprise four or five members, rather than six to 12
• teleconference focus group, where a telephone network is used to access participants who cannot be co-located
• online focus group, where computers connected through the Internet are used to access participants who cannot be co-located.

The method has strengths and weakness, which are outlined in Table A4.
Table A4. Strengths and weaknesses associated with the focus group technique

<table>
<thead>
<tr>
<th>Strengths</th>
<th>Weaknesses</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Group discussion produces data and insights that would be less accessible without interaction found in a group setting.</td>
<td>• Unless repeated, they are a one-shot method of collating a group's ideas.</td>
</tr>
<tr>
<td>• Listening to others’ verbalised experiences stimulates memories, ideas and experiences in participants, resulting in a group effect.</td>
<td>• As the results are dependent on interaction with the facilitator, they may be influenced by that person, raising doubts about the validity of the results.</td>
</tr>
<tr>
<td>• Group members discover a common language to describe similar experiences. This enables the capture of a form of 'native language' or 'vernacular speech' to understand the situation.</td>
<td>• Participants may aim to please and provide answers that correspond with the facilitator's viewpoint, or the viewpoints of other participants.</td>
</tr>
<tr>
<td>• Provide an opportunity for disclosure among peers, in a setting where participants have relevant experience.</td>
<td>• Lack anonymity.</td>
</tr>
</tbody>
</table>

The process for conducting a focus group is:

- **before the session**
  - rehearse the ground rules
  - aim for equal participation
  - display respect for others (let them finish what they’re saying, no put downs)
  - reflect on potential political or personal conflicts before starting the group, and devise advance strategies for dealing with these (for example, seating arrangements or pre-group requests)
  - keep focused and maintain momentum (don't get bogged down in particular issues)
  - get closure on particular questions as far as possible
  - allow space for participants to get issues off their chest

- **introduction and kick off**
  - record the location, time and date
  - welcome all participants and ensure they feel appreciated
  - review the goal of the focus group
  - introduce the participants to one another

- **establish the agenda**
  - review the agenda
  - review the purpose of the focus group
  - review the activity—what will participants do
  - explain that questions will be introduced and responses encouraged
  - explain how the focus group will be recorded
• during the focus group
  - speak clearly and slowly
  - phrase questions in a neutral manner
  - don’t favour one group or participant over others
  - promote even participation
  - be sensitive to conflict

• closing the focus group
  - record the duration of the focus group
  - ensure participants know their comments will be taken seriously
  - provide a brief summary of the day’s events, achievements and what was said
  - thank participants for their time.

Quantitative forecasting

Quantitative techniques use statistical and modelling techniques to develop datasets that inform workforce planning decisions. You most often use these, particularly the more complex modelling methods, where complex workforce environments require more ‘intelligent’ data to manage workforce risk. Common approaches are described in this section, including regression analysis, decision analysis, zero-based staffing and staffing ratio and performance. It’s not expected that a workforce planner holds this expertise, more that they will source this expertise from within their organisation or through their networks.

Regression analysis

In statistics, regression analysis includes techniques for modelling and analysing several variables, when the focus is on the relationship between a dependent variable and one or more independent variables. More specifically, regression analysis helps one understand how the typical value of the dependent variable changes when any one of the independent variables is varied, while the other independent variables are held fixed.

Regression analysis is widely used for prediction and forecasting. Regression analysis is also used to understand which among the independent variables are related to the dependent variable, and to explore the forms of these relationships. It can also be used, in limited circumstances, to develop an analysis of the causal factors or relationship between dependant and independent variables.

A range of techniques are available for carrying out regression analysis. The most familiar methods are linear regression and ordinary least squares regression. These methods provide for a finite number of unknown parameters to be estimated from the data. Time trend analysis is a simple form of linear regression where a dependent variable is analysed against the independent variable of time.

Regression models can predict a value of the ‘Y’ dependent variable given known values of the ‘X’ independent variables. Prediction within the range of values in the dataset used for a model is known as interpolation. Prediction outside the range of the dataset is known as extrapolation (that is, a type of forecasting). Performing extrapolation relies strongly on the regression assumptions and model. Regression
analysis is generally more reliable the more data is included in the regression model. The further the extrapolation goes outside the data, the more room there is for the model to fail due to differences between the assumptions and the dataset.

It’s generally advised that when performing extrapolation, one should accompany the estimated value of the dependent variable with a prediction range that represents the uncertainty. Such ranges tend to expand rapidly as the values of the independent variable(s) move further outside the dataset. For such reasons and others, care should be taken in extrapolating too far outside the data range.

**Decision analysis**

Decision analysis is a formal structured approach to decision making. It includes many procedures, methods, and tools for identifying, clearly representing, and formally assessing important aspects of a decision, for prescribing a recommended course of action by applying the maximum expected utility to a well-formed representation of the decision, and for translating the formal representation of a decision and its corresponding recommendation into insight for the decision maker and other stakeholders.

This method uses a structured format more suited to complex environments planning changes that will have a significant change on your organisation (such as significant policy or legislative change, or significant machinery of government changes).

Decision Analysis uses graphical representations such as decision trees and influence diagrams. These graphically represent the alternatives available to the decision maker, any uncertainties or risks associated with the alternatives and the evaluation measures that show how well they may achieve their objectives.

Uncertainties are represented through probabilities and probability distributions; while risk is represented by utility functions and the trade off between conflicting objectives. The relationship between risk and the trade off associated with conflicting objectives can be developed using multiattribute functions or multi-attribute utility functions.

Decision analysis advocates choosing that decision whose consequences have the maximum expected utility (or which maximise the probability of achieving the uncertain aspiration level).

Amongst decision support tools, decision trees and influence diagrams have several advantages. They:

- are simple to understand and interpret—people can understand decision tree models after a brief explanation
- have value even with little hard data—important insights can be generated based on experts describing a situation (its alternatives, probabilities and costs) and their preferences for outcomes
- use a white box model—if a given result is provided by a model, the explanation for the result is easily replicated by simple math
- can be combined with other decision techniques. The example in Figure A2 uses Net Present Value calculations, Program Evaluation Review Technique (PERT) 3-point estimations (decision #1) and a linear distribution of expected outcomes (decision #2).
Figure A2. Ability to combine decision tree and influence diagrams with other decision techniques

**Decision tree**

A decision tree is used as a visual and analytical decision support tool, where the expected values or expected utility of competing alternatives are calculated. It has three types of nodes:

- decision nodes, commonly represented by squares
- chance nodes, represented by circles
- end nodes, represented by triangles

**Influence diagram**

Influence diagrams are directed acyclic graphs with three types and one subtype of node and three types of arc or arrow between those nodes.

Nodes:

- decision node (corresponding to each decision to be made), represented as a rectangle
- uncertainty node (corresponding to each uncertainty to be modelled), represented as an oval
- deterministic node (corresponding to special kind of uncertainty that its outcome is deterministically known whenever the outcomes of some other uncertainties are also known), represented as a double oval
- value node (corresponding to each component of additively separable Von Neumann – Morgenstern utility function), represented as an octagon (or diamond).

Arcs:

- functional arcs (ending in value node) indicate that one component of the additively separable utility function is a function of all nodes at their tails
- conditional arcs (ending in uncertainty node) indicate that the uncertainty of the nodes at their heads is probabilistically conditioned on all nodes at their tails
- conditional arcs (ending in deterministic node) indicate that the uncertainty of the nodes at their heads is deterministically conditioned on all nodes at their tails
- informational arcs (ending in decision node) indicate that the decision of nodes at their heads is made with the outcome of all nodes at their tails known beforehand.
Given a properly structured influence diagram:

- decision nodes and incoming information arcs collectively state the alternatives (what can be done when the outcome of certain decisions and/or uncertainties are known beforehand)
- uncertainty or deterministic nodes and incoming conditional arcs collectively model the information (what are known and their probabilistic/deterministic relationships)
- value nodes and incoming functional arcs collectively quantify the preference (how things are preferred over one another).

Figure A3 depicts an example of a properly structured influence diagram.

**Figure A3. Properly structured influence diagram**

**Zero-based staffing (or budgeting)**

Zero-based staffing (or budgeting) is a technique of planning and decision making as an alternative to the more traditional incremental staffing (or budgeting) process—where departmental managers justify only increases over the previous year’s budget or resource level and what has been already used or allocated is automatically sanctioned.

In zero-based staffing, every function is reviewed comprehensively and all activities must be reassessed and approved, rather than only changes. Zero-based staffing requires the budget request to be justified in complete detail by the functional area manager, starting from the zero base. The approach is indifferent to whether the total staffing level (or budget) is increasing or decreasing. However, in a whole-of-organisational context, processes that use zero-based staffing to rebase an organisation need to firmly control bid and decision-making processes to ensure outcomes can be delivered within available resource provisions.
Zero-based staffing can also refer to the identification of a task or tasks and then the staffing or resourcing required to complete the task independent of current resourcing. For example, a zero-based approach is typically used in projects to define the total number of staff of each type required to complete allocated tasks regardless of how many are currently working for your organisation.

The following steps are required to conduct a zero-based staffing approach:

• identify the points in time for which you're defining staffing requirements
• determine which projects will be underway at each point
• define the staffing required for each project at each point in time
• sum the requirements for a given point in time across all projects to determine total requirements.

The zero-based staffing approach can work well when projects or programs are starting from scratch and don't have a current workforce.

Zero-based staffing can use historical knowledge or benchmarks to inform future staffing requirements of new business initiatives or projects. It can be applied at a purely headcount level or by job role or job family.

**Staffing ratio and performance**

Staffing ratios can be used to assess future staffing needs against predicted volumes of organisational activity or service requirements. Often, it’s easier to predict demand for products or services in a functional area and then, using staffing ratios, derive staffing needs. You can also use staffing ratios in organisational circumstances with prescribed requirements, such as hospitals or schools, to calculate staffing needs based on current or predicted client numbers.

Your organisation can also use staffing ratios to benchmark your staffing use or needs to similar-sized organisations with similar output or service delivery models in different industries. This technique can help inform your management of the level of efficiency in which they are operating or need to operate to achieve value for money outcomes.

This technique can be applied at a purely headcount level or by job role or job family.