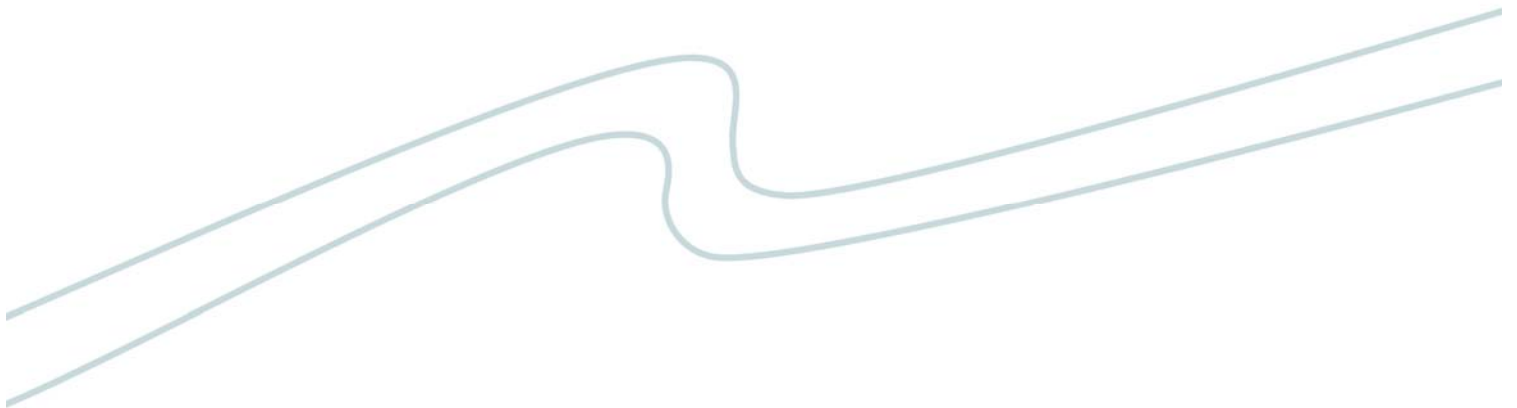


Research to support the ITOs' leadership role

**Handbook on conducting skills-
related research**

**Report to the Industry Training
Federation**

April 2006



Preface

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NZIER was established in 1958.

Authorship

This report has been prepared at NZIER by Sharon Pells and reviewed by Mark Cox.

8 Halswell St, Thorndon
P O Box 3479, Wellington
Tel: +64 4 472 1880
Fax: +64 4 472 1211
econ@nzier.org.nz
www.nzier.org.nz

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1. Introduction

1.1 Why read this?

The purpose of this handbook is to assist you in researching the current and future skill needs of the industries relevant to your ITO. It is intended to be a practical guide, and aims to encourage you to consider the most appropriate ways of conducting skills-related research.

1.2 Who should read it?

If you are involved in research at a strategic level within your ITO (whether you're the CEO, a strategic manager or a research practitioner), this handbook should offer some ideas in relation to researching industry skill needs. Even if your ITO has made significant progress in terms of skills-related research, it should provide a useful checklist for you to make sure all the research bases have been covered.

1.3 Where does it fit?

This handbook deals to the first part of the ITOs' legislated leadership role on matters of skills and training: "identifying current and future skill needs". The other two aspects of the leadership role - developing strategic training plans (STPs) and promoting training - are therefore outside the scope of the handbook. Having said this, the overall approach does have an eye towards the development of a STP, in the sense that the research covered by this handbook would act as an input and evidence base for an STP.

It is intended to complement other work on the ITO leadership role, such as the "10-step process" developed by the Tertiary Education Commission (TEC), and the "8x8" conceptual matrix developed by the Industry Training Federation (ITF). In particular, the approaches recommended in this handbook address elements three and four, and levels one, two, four and six of the ITF "8x8" conceptual matrix.

It is also intended to be read in conjunction with the companion paper "*Research to support the ITOs' leadership role – analysis of economic and social environment*" written by NZIER for the ITF. The companion paper provides an overview of skills-related issues across *all* industries at a high level, and is therefore intended to complement (not replace) the industry-specific research of each ITO. This handbook aims to address the gaps, so that if you use the approaches suggested, the resulting research should broadly dovetail with the industry-wide research.

1.4 How was it developed?

The approaches recommended in this handbook are intended to be well grounded, and are based on tried and tested techniques, including work that NZIER has conducted for a number of ITOs. We have also reviewed some of the existing research conducted by ITOs, based on a brief internet search of ITO websites. In addition, we have considered the key messages from government agencies on the ITO leadership role contained in documents such as the Tertiary Education Strategy and Statement of Tertiary Education Priorities. And the draft handbook has been “tested” on a Reference Group of seven ITOs. The final recommended approaches are based on certain principles which are outlined in section 2.1.

Note that we have outlined one broad framework (see section 2.2) for conducting skills-related research - there are many others. Having said this, within this overall framework, we have tried to identify a range of options (in terms of specific research techniques) for you to consider. The techniques appropriate to your own ITO will depend on a number of factors, including the desired outputs from the research and the capability of your ITO. Some of these factors are discussed in section 3.

1.5 How is it structured?

The structure of the handbook is as follows:

- Section 1 (this section) provides an introduction
- Section 2 outlines the overall recommended framework to conducting skills-related research, and some concepts that underpin that framework
- Sections 3 to 8 address the specific aspects of the overall framework - some issues for you to consider before starting skills-related research, how to identify the drivers of the demand and supply of skills, some approaches for researching the current and future demand and supply of skills, analysing how well matched are the demand and supply of skills, how to interpret the results of the research and what it means for strategy development
- Section 9 provides a brief conclusion
- The appendix contains a bibliography and identifies a number of New Zealand and overseas sources for data on skills-related research and labour market issues.

To bring some life to the concepts and suggested approaches, we refer throughout the handbook to a hypothetical ITO – the “NZ Laundries and Dry-Cleaners ITO Inc”.

2. Overview and conceptual framework

In this section we provide an overview of our recommended approach to conducting skills-related research (see Figure 1), as well as some concepts and definitions that underpin that framework. Before we do so, it is useful to outline the principles that have guided its development.

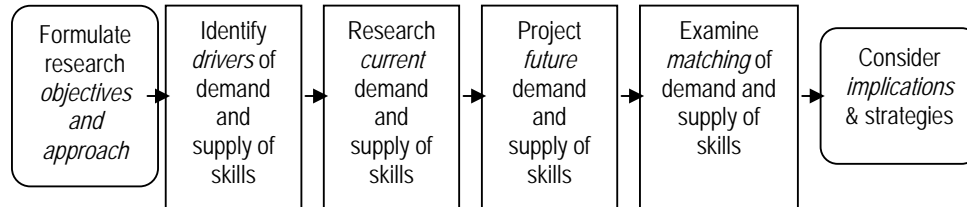
2.1 Principles

Our recommended approach has been shaped by the following principles:

- Enhancing the *capability* of ITOs
- Suggesting techniques that are *credible, sustainable, and cost-effective*
- Producing outputs that are *contextualised* (ie take into account those factors that affect all ITOs/industries)
- Providing a *strong evidence base* for ITOs' decision-making, including the development of strategic training plans, with an emphasis on the *strategic understanding* of issues.

2.2 Overall framework

Figure 1 Overall approach



Source: NZIER

The remainder of the handbook is structured around these six research stages. So you can use this structure to pick up the model at different stages, depending on where your ITO is at and what your priorities are.

2.3 Definitions and concepts

Throughout the handbook we refer to some key concepts and definitions relating to skills and labour markets. In particular, the framework separates out the demand for and supply of skills and skilled labour, which we discuss briefly here.

2.3.1 What are skills?

When we are talking about “skills” here we are referring to “the ability of an individual to perform a set of tasks and to fulfill the technical requirements of an occupation”¹.

These skills are embodied in *people*, which means that an individual person may hold more skills than are required for a specific job or occupation.

In simple terms, the skill needs of an industry are met by the number of people employed in the industry, and the skills those people hold.

2.3.2 Measuring skills

There are two widely used ways of measuring skills, although each one has certain limitations:

- *Qualifications* tend to be a better indicator of the initial endowments of an individual after completing a course of education and training, rather than the skills actually deployed by the individual in a job
- *Occupation* is used to infer some type of valuation of the skills held so as to develop a scale or index. For example, the New Zealand Standard Classification of Occupations (NZSCO) defines nine major occupational groups, placed in a hierarchy depending on skill level. The skill level specified for “Trades workers” (the 7th major group) is “Trade Certificate or other vocational qualification”.

The International Adult Literacy Survey (in which New Zealand participated in 1996) can also be used as a proxy for skill level.

2.3.3 Demand for skilled labour

The demand for skilled labour is a derived demand – it arises from the demand for firms’ output and the need for employees to meet that demand.

Changes in the demand for skilled labour are therefore generated at two levels:

- By changes in the volume of demand for firms’ output
- By changes in the quantity and/or quality of labour required to produce any given quantity of output. This can result from improvements in *labour productivity* (output per hour worked), changes in product technology, production technology and/or substitution between capital and labour.

¹ New Zealand Standard Classification of Occupations 1999
<http://www.stats.govt.nz/NR/rdonlyres/4109C9E6-EECB-4FC3-B48A-A7C8A37E90A7/0/NZSCO991.pdf>

The various types of demand for skilled labour can be categorised as:

- Demand brought about by market expansion – based on the demand for the underlying products or services in the industry (*growth* demand)
- Demand arising from people leaving the industry (*replacement* demand), which can be influenced by things like the age profile of the industry
- Demand due to a transformation in the types of skills required by an industry (*occupational shifts* or demand arising from *technological changes*).

2.3.4 Supply of skilled labour

At an aggregate level the *labour supply* volume is affected by demographic trends, such as changes to the number of people entering the workforce and migration trends. These issues are a key focus of the companion paper “*Research to support the ITOs’ leadership role – analysis of economic and social environment*”.

At an individual level, people make labour force participation and career choices based on their personal motivations. They may be influenced by wages, career opportunities, working conditions and lifestyle choices.

In terms of *skills*, the supply of skilled labour is affected by the number of people training and obtaining qualifications. This is influenced by factors such as the length of time it takes to obtain the qualification.

2.3.5 Matching process

Over time wages should adjust to assist the matching between the demand for and supply of skilled labour. For example, if there is a lack of skilled labour, then there should be increased competition between firms, which in turn means that wages are bid up. This increase in wages encourages more people to train and this should in turn help to alleviate the skill shortage.

However, mismatches between the demand for and supply of skilled labour may occur due to factors such as:

- Imperfect information in the labour market
- The long-term nature of occupational choice
- Wage “stickiness” (employers and employees will adjust their expectations about wages slowly in response to market conditions).

An important consideration in terms of the matching process is the *dynamics* of the labour market. There is a continual flow of people moving in and out of the labour market - unemployed people securing work while others lose jobs and become unemployed, and people changing jobs. The matching process is therefore ongoing, and its effectiveness often depends on the availability of accessible information on job opportunities etc.

It is also important to note that, in the case of labour markets, supply and demand are closely linked. This is because, for example, labour supply is determined to a large extent by population size and changes, which in turn generate demand for labour because populations have needs that require to be served.

2.3.6 Skill shortages

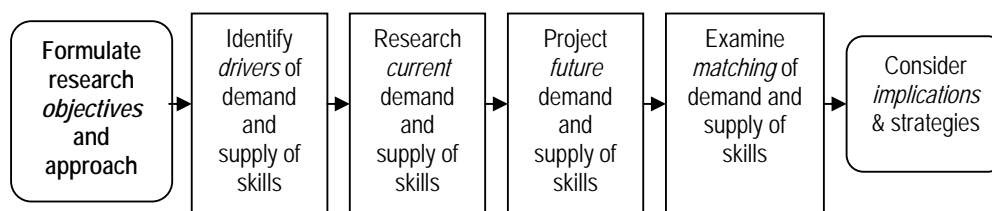
The New Zealand Department of Labour (2005) defines mismatches between demand and supply of skills as follows:

- A genuine *skill shortage* occurs when employers have considerable difficulty filling job vacancies simply because there are insufficient job seekers with the required skills
- *Skill gaps* are a similar but milder form of the same problem. Employers are able to find people but they have only some, not all, of the skills required. This means that the employer can still get the job done but not at the level required
- *Recruitment difficulties* are quite different. These occur when there are enough job seekers with the required skills but they are unwilling to take up the work on offer. The job seekers could deem wages to be too low, the working conditions too poor or the industry could have a bad reputation.

3. Stage one – objectives and approach

This section covers the first of the six research stages – what you need to consider before you start conducting or commissioning any skills-related research. The setting of objectives and selection of research methodology are crucial to the success of the remaining stages of the research process.

Figure 2 Stage one – objectives and approach



Source: NZIER

3.1 Defining objectives

Any research project should kick off with defining the objectives of the project. Although the legislative requirement of ITOs refers to the broad goal of “identifying current and future skill needs”, you will need to consider the specific objectives of your ITO within this overall aim, such as:

- What are the key research questions you are trying to answer?
- What outputs or deliverables are you trying to achieve?
- What decisions are you seeking to influence?
- Whose decisions are they?
- What’s the risk of getting it wrong?

The final deliverables or outputs of the overall project will shape the specific research objectives. Research is usually a means to an end and is likely to form part of a wider set of objectives. It is important that the research contributes to your ITO’s strategic understanding of industry skill needs, so that you’re not just collecting data for data’s sake. It is also helpful to consider up-front your ITO’s potential role in the labour markets of the industries it serves (see section 8.2), as this may influence your approach.

These overall objectives will drive the appropriate approach. For example, if you’re primarily concerned with increasing your ITO’s capability, the most appropriate approach may be to use in-house resources to conduct the research, or a combination of in-house and agency. However, if you are seeking to influence external stakeholders such as government officials or tertiary education providers, it might be more appropriate to use an external agency and base the methodology on the use of official data.

3.2 Deciding scope

You will need to determine the specific scope of the research study. Whilst the precise scope will vary depending on the specific research objectives, here we consider some general issues of scope that are likely to be relevant.

3.2.1 Industries and occupations

The first step involves deciding which specific industries and/or occupations you are interested in researching. This should be done in a way that makes sense to the industry – they have to relate to the findings.

In the context of your ITO's STP, it is important to think about how you will divide up the industries in your ITO's gazetted coverage (for example, will you develop one STP, or separate ones for each industry?). It is worth noting that, if you do decide to develop separate STPs for each industry in your coverage, and therefore examine each industry separately, it is useful to use common data sources and approaches, so that you can compare the findings for each industry. You may also want to consider the linkages (and possible joint development) between your ITO's STPs and those of other ITOs, and therefore a joint research approach.

A good starting point for scoping out relevant industries and/or occupations is to use standard classifications, such as the Australian and New Zealand Standard Industrial Classifications (ANZSIC) and New Zealand Standard Classification of Occupations (NZSCO) codes see www.stats.govt.nz.

Using standard classifications has a number of benefits:

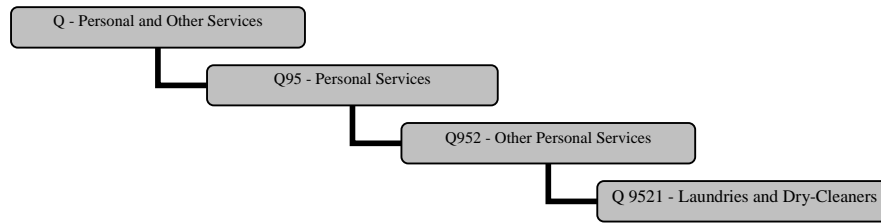
- Data based on these definitions is often available *free of charge*
- The research will be *sustainable*. Regularly updated and official sources (see appendix) are often based on these standard classifications
- Using common definitions is likely to enhance *consistency* amongst ITOs
- These definitions are *credible and widely recognised* by government officials and other organisations.

a) Industry classifications

The standard ANZSIC industry classifications are based on businesses being assigned to an industry according to their predominant economic activity. The structure is based on up to six levels of classification, each of which drill down into successive degrees of detail. For example, there are 17 industry classifications at the 1-digit level, and 476 at the 6-digit level.

In Figure 3 we show the classifications relating to our hypothetical ITO – the NZ Laundries and Dry-Cleaners ITO. The diagram starts off with the broad industry grouping “Personal and Other Services” within which the most narrowly defined classification “Laundries and Dry-Cleaners” sits.

Figure 3 Industry classifications



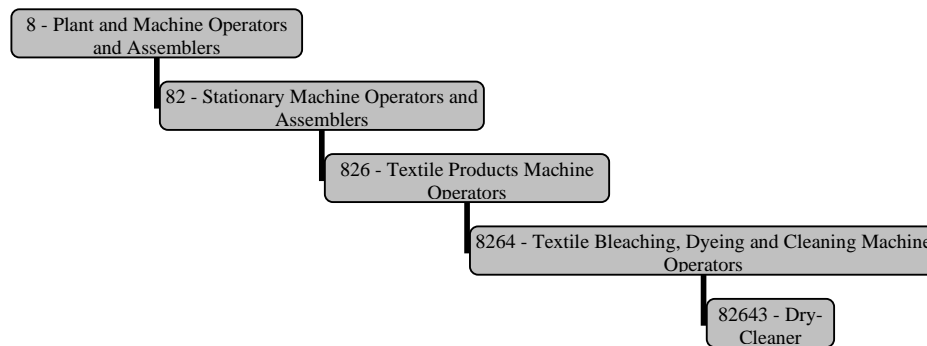
Source: Statistics New Zealand

b) Occupation classifications

An occupation is defined as “a set of jobs which involve the performance of a common set of tasks”². The attributes required to perform a job are the skill component of the occupation. Occupations are therefore important to skills-related research because they are strongly associated with skill sets.

The NZCSO classifications follow a similar approach to the ANZSIC ones, with codes that drill down into more and more detail. There are nine classifications at the 1-digit level and 604 at the 5-digit level. Figure 4 identifies the structure for one occupation relevant to our hypothetical ITO.

Figure 4 Occupation classifications



Source: Statistics New Zealand

Note that in 2006, the new ANZSCO codes will be used for Census etc – [http://www.ausstats.abs.gov.au/ausstats/subscriber.nsf/Lookup/5FE5DF1371EEE726CA25708900805997/\\$File/12210_2005.pdf](http://www.ausstats.abs.gov.au/ausstats/subscriber.nsf/Lookup/5FE5DF1371EEE726CA25708900805997/$File/12210_2005.pdf)

² New Zealand Standard Classification of Occupations 1999 <http://www.stats.govt.nz/NR/rdonlyres/4109C9E6-EECB-4FC3-B48A-A7C8A37E90A7/0/NZSCO991.pdf>

3.2.2 Regional dimension

You may want to consider the extent to which you are interested in a regional dimension – eg examining the demand and supply of skills at a regional level. It is important to decide this before you start, as it will significantly affect your approach. For example, if you commission a quantitative survey, you will need a much larger sample to achieve statistically significant results at a regional than a national level. Similarly, if you are conducting desk research, you will need to consider the extent to which you require regional data, especially if you are obtaining customised data in relation to your industries (for example from Statistics New Zealand or TEC).

3.2.3 Time horizon

You will need to decide the time horizon you are interested in for the future-focused aspects of the research. This will be determined by factors such as the business cycle of the industry, and the time horizon over which the industry can reasonably be expected to have a sensible view on future skill needs.

For example, the appropriate time horizon for an industry with rapidly changing technology may be shorter than that for one with a more stable environment.

3.3 Approach

Once you've decided on the objectives and scope of the research, it is important to consider the best way of achieving the desired outputs. This will involve deciding on the broad approach, and whether to conduct the research in-house or use an external agency. It is important here to recognise the role played by the ongoing informal discussions that your ITO has with industry stakeholders, alongside more formal research techniques.

3.3.1 Types of research

There are two broad types of research - primary research, which involves some original data and information gathering, and secondary research, which uses available research and data.

The main research techniques, and their relevance to skills-related research, are outlined below. It is worth noting that typically a research programme would start off with some secondary research (to identify *existing* research/data), followed by primary research - often a qualitative phase (to *explore* and *understand* the subject of interest) and then a quantitative phase (to *measure* it).

a) Desk research

This is a form of secondary research, and involves investigating what data/research already exists. It avoids “reinventing the wheel” and is relatively quick and inexpensive. It is therefore generally useful to start off a research programme with desk research, to avoid embarking on (costly) primary research if information already exists. However, the down side of desk research is that the research/data found may not exactly meet your needs - it may be out of date and may not be in the New Zealand context.

In relation to skills and labour market research, there is a significant amount of information available, including that from official data sources such as Statistics New Zealand, TEC, Department of Labour etc. Some of this is available free of charge on the internet, but in other cases you may need a customised data request. As mentioned elsewhere in this handbook, the benefit of using official data is that it is widely recognised, regularly updated and allows some comparative analysis (for example between your ITO's industries and all industries) to be undertaken. In the appendix we have identified a number of data sources and considered their relevance.

b) Qualitative research

The purpose of primary qualitative research is usually to provide detailed feedback on the subject of interest. It is a very useful tool to understand attitudes and opinions, generate and test ideas and solutions, diagnose problems and ensure that the subject is fully explored.

Primary qualitative research often involves interviewing a limited sample of people, usually face-to-face and using open questions. The main methods used are focus groups and depth interviews. Because it involves a small sample, the results of qualitative research aren't statistically reliable. In other words, although you know that some people in the target population hold the views expressed, you do not know how widely the views are held.

Qualitative research techniques have a wide variety of uses in relation to skills research. It is an important tool because it provides a strategic understanding of the relevant issues. For example, qualitative research can be used to understand the key drivers of an industry and the dynamics of that industry and its future outlook, or to evaluate how effectively the training system is working and what improvements can be made, or to identify strategies to ensure that the industry obtains the skills it needs.

c) Quantitative research

Quantitative research is about statistics and measuring things – the output of quantitative research is usually numbers. Although most people tend to think of a survey when they think of quantitative techniques, in fact any statistical analysis of data (for example an analysis of numerical data gained via desk research) constitutes quantitative research.

Survey-based data collection involves using a structured questionnaire (conducted face-to-face, by phone, internet or by post) consisting mainly of closed questions, with a large statistically reliable sample of respondents. This can be useful for rating attributes, uncovering differences in opinion amongst different groups of people, identifying regional variations etc. However, it can be expensive, and, unless there is an ongoing programme of research, only usually provides a “snapshot” at a given point in time. A further pitfall with this type of research is the danger of measuring the wrong thing. In other words, it is usually important to undertake some desk research and/or qualitative research *before* conducting a survey, to identify and understand the relevant issues which are then measured via the survey.

A number of other quantitative techniques can be used in relation to skills and labour market research. One that is frequently mentioned is “econometric modeling”, which essentially means measuring mathematically the relationship between a number of variables. Often this involves identifying a “best fit” line for a time series to try and project historical trends into the future.

However, overall we recommend that you consider carefully whether or not quantitative research is the most appropriate tool to achieve your research objectives, for the reasons discussed in section 6.3.1.

d) Delphi studies

Delphi studies make use of a panel of experts, which is sent a series of questionnaires anonymously, and is provided with a summary of opinions from the preceding questionnaire before answering the next one. In each succeeding round of questionnaires, the range of responses by the panelists decreases and the median moves toward what is deemed to be the “correct” answer. Delphi studies are often used for long-term forecasting.

One advantage of the Delphi Method is that the experts (who often reside throughout the world) never need be brought together physically. Since the responses are anonymous, the pitfalls of ego, domineering personalities and the “bandwagon or halo effect” in responses are all avoided. However, on the down side, this method lacks the interactivity of, say, a focus group. In addition, “respondent fatigue” may set in during the course of the various rounds of questionnaires. Perhaps more importantly, future developments in an industry are not always predicted correctly by iterative consensus or by experts, but at times by “off the wall” thinking or by “non-experts”.

This method is potentially useful for the future-focused aspects of skills research. It is probably most relevant to those ITOs/industries where the demand drivers are subject to global influences, so that industry expertise from other countries can be accessed.

e) Action research

Action research, put simply, is “learning by doing” - a group of people identify a problem, do something to resolve it, see how successful their efforts were, and if not satisfied, try again. What separates this type of research from daily problem-solving is the emphasis on scientific study - the researcher studies the problem systematically and ensures the intervention is informed by the appropriate research methodology. Because of its action focus, this type of research intuitively has much appeal. However, it needs to be conducted rigorously so that the outcomes are evaluated in an objective way.

Action research can be useful in the context of skills research. For example, it can be used to test and evaluate some training or labour market strategies previously identified through desk or qualitative research.

3.3.2 In-house or external agency?

You will also need to decide whether to conduct the research in-house or to commission an external agency. This decision will be influenced by a range of factors, including the objectives and target audience of the research, your ITO's capacity and capability and the budget and timelines involved.

The benefits of conducting the research in-house include:

- Increased in-house capability and institutional knowledge
- Industry-specific and ITO knowledge and experience
- Generally less expensive.

The benefits of using an external agency include:

- Research and labour market expertise
- Fresh perspective
- Credibility.

You might want to consider a “mix and match” approach, where certain aspects (eg research design) are undertaken externally and some (execution) are conducted in-house, to help develop the skills of staff within your ITO.

3.4 Summary

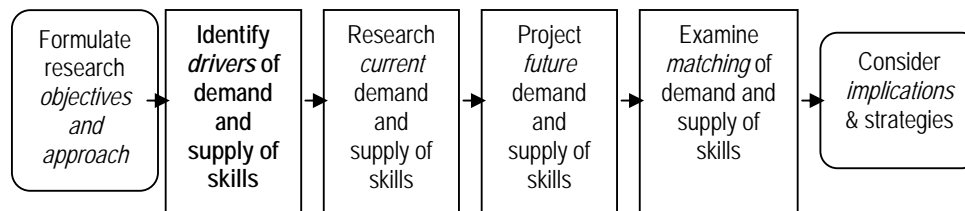
This stage is concerned with the all important up-front work - what you need to consider before you embark on any research:

- Define the objectives and scope of the research
- Identify the most appropriate approach for achieving the desired outputs. In particular, consider what information already exists (especially official data) before you start undertaking or commissioning primary research.

4. Stage two – drivers of skills

When considering current and future skill needs, it is important to understand the *dynamics* of the labour market and the *drivers* of skills in the industries relevant to your ITO, which is the second of the six research stages and the focus of this section.

Figure 5 Stage two - drivers of skills



Source: NZIER

In this stage we are interested in *identifying* the drivers of demand and supply of skills, as opposed to researching the various drivers, which is considered in section 5. In other words, this stage is essentially concerned with scoping out the research content.

4.1 Drivers of demand

As we noted in section 2, the demand for skills is essentially the number of jobs required by employers, and the skills required of people in those jobs.

The demand for jobs (or to be precise, job offers) is a derived demand – it arises from the demand for firms’ output and the need for employees to meet that demand. This can be influenced by factors such as improvements in labour productivity (output per hour worked), changes in product technology, production technology and/or substitution between capital and labour.

The demand for the underlying products or services in the industries relevant to your ITO will obviously vary depending on the nature of those industries, but may include factors such as:

- Economic growth and income levels
- Demographic changes
- Consumer tastes
- Business cycle
- Global demand for the product or service
- Technology and productivity
- Changes in regulatory/legislative environment.

For example, key drivers of demand in relation to our hypothetical ITO – the NZ Laundries and Dry-Cleaners ITO - are likely to be income levels, demographic changes and fashion, as these factors will influence the demand for dry-cleaning services.

There are a number of ways you can find out what factors drive the demand for skills in an industry. It is likely that your ITO already has a good understanding of these drivers through the ongoing informal discussions that it has with employers and other stakeholders. You may want to conduct or commission some desk research to see what research already exists in relation to the dynamics of your industries. Or you may want to conduct or commission some qualitative research (focus groups and/or depth interviews), for example amongst industry opinion leaders, to better understand the drivers of change in the industry.

4.2 Drivers of supply

Although the ITO legislated leadership role refers to “current and future skill *needs*” and therefore appears to have a demand focus, it is important to consider skill needs in the context of skills available, or the *supply* of skills.

In section 2 we outlined some of the broad factors that influence the supply of skills, both at an aggregate and an individual level, which include:

- Motivations for entering an industry and its relative attractiveness
- The qualifications held by people in the industry (both existing workforce and those entering/leaving the workforce)
- Wages and working conditions in the industry
- Training (type, length of course, delivery method and availability).

As with the demand for skills, there are a number of ways you can find out what factors are likely to drive the supply of skills in your ITO’s industries. It is likely that your ITO, via discussions with its stakeholders, already has a good understanding of these drivers. Or you may want to conduct or commission some desk research or some qualitative research to better understand the drivers of the supply of skills in the relevant industries.

4.3 Summary

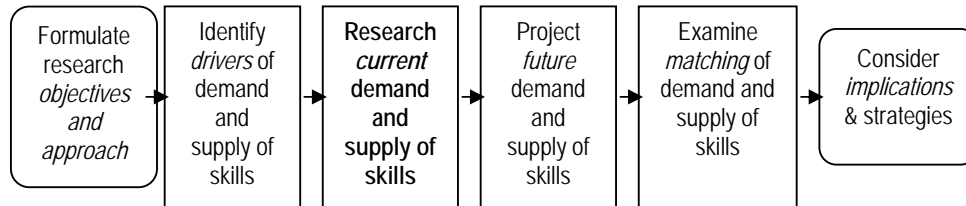
Scope out the key drivers of skills, either through desk research, qualitative research (focus groups/interviews) or your ITO’s own knowledge of the industries and ongoing discussions with stakeholders. Identify:

- The factors that affect the *demand* for skills, including the drivers of demand for the underlying product/service in the industry
- The drivers of the *supply* of skills to the industry, including training.

5. Stage three – current skills

The previous section was concerned with identifying the factors that drive the demand and supply of skills. In this section - the third of our six research stages - we consider how to research those specific drivers.

Figure 6 Stage three - current skills



Source: NZIER

When conducting this research stage, it is important to be discriminating in the data you collect. There is a danger of producing a lot of data which may not tell you much about the dynamic interactions between activity in the industry (the demand for skills) and the supply of skills.

It is also important to contextualise the demand for and supply of skills in the industries relevant to your ITO with that in other industries across New Zealand. These contextual issues are discussed in detail in the NZIER companion paper “*Research to support the ITOs’ leadership role – analysis of economic and social environment*”.

It is therefore useful, where possible, to obtain comparative data. In other words, a richer understanding can be gained by finding out employment trends in those industries relevant to your ITO compared with employment trends across all industries, than just your ITO’s trends in isolation.

5.1 Demand for skills

5.1.1 Demand for jobs - employment

Once you’ve identified the factors that are likely to drive the demand for skills, you’ll need to obtain some information in relation to those drivers. What you are essentially trying to work out is: what is the relationship between the drivers you’ve identified and the demand for skills? The demand for skills in an industry is generally reflected in employment levels in that industry.

If we consider our hypothetical ITO, the NZ Laundries and Dry-Cleaners ITO, and consider some of the likely key drivers of dry-cleaning skills, we can identify a range of data sources in relation to these drivers – see Table 1.

Table 1 Demand for dry-cleaning skills

Demand driver	Source of data
Household income levels	Income survey – Statistics New Zealand
Demographic changes (size and composition of the population)	Population level and structure – Statistics New Zealand
Lifestyle changes (eg importance of leisure time)	Research/literature conducted by industry associations, overseas skills agencies – see appendix
Fashion (fabrics that require drycleaning)	
Technological change (in the drycleaning process)	

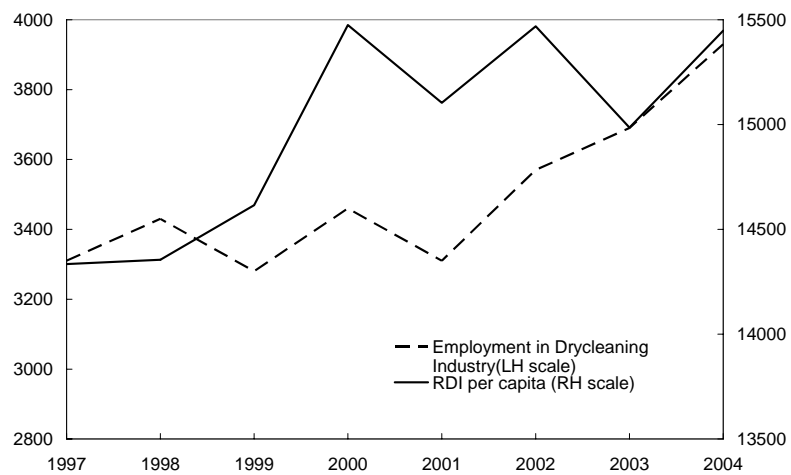
Source: NZIER

If we take one of these drivers of demand for skills in the laundries and dry-cleaners industry (say income levels), we can consider the relationship between this driver and employment in the industry.

Figure 7 uses employment data from Statistics New Zealand’s Business Frame survey, and income data derived from Statistics New Zealand data. It shows that there is a link between employment in the laundries and dry-cleaners industry and income levels, but that it’s not especially strong.

Figure 7 Employment in the laundries and dry-cleaners industry and income per capita

Employment (LHS), real disposable income per capita (RHS)



Source: Statistics New Zealand’s Business Frame Survey, NZIER

So you will need to try and obtain information on all the factors which are likely to drive the demand for skills in the industries covered by your ITO.

In some cases, as in the example above, you should be able to obtain some hard data, so that you can consider the extent to which the drivers are a good explanation for changes in the demand for skills.

In other cases, the drivers are likely to be more qualitative in nature. For example, in the dry-cleaning example, fashion, and the development of new fabrics, are likely to be key drivers of demand. For these types of issue, a literature review would be helpful to find out about future trends. Alternatively, you may need to conduct or commission some qualitative research with employers, possibly as part of a broader project on skill needs.

As mentioned elsewhere in this handbook, you probably want to consider first up what information already exists before you start commissioning any primary research.

5.1.2 Types of skill

So far we've considered the factors that are likely to drive the demand for the *number of jobs* in an industry. Here we consider the *types of skills* that might be required.

a) Occupation mix

Occupations are strongly associated with skill sets, so are a useful starting point when considering skills.

If we consider our hypothetical ITO, Table 2 identifies the main occupations (those within which more than 50 people were employed in 2001 according to Statistic's New Zealand's Census) in the laundries and dry-cleaners industry.

The table shows that the occupations that account for the largest share of employment in the laundries and dry-cleaners industry are those with *industry specific skill sets*, such as launderer and dry-cleaner. Having said that, there is a significant number of occupations with *generic skill sets*, such as general manager, sales assistant and general clerk.

Table 2 Occupations in the laundries and dry-cleaners industry

Employment, 2001

Occupation (>50 employees)	Number employed
General manager	147
Retail manager	72
Technical rep	93
General clerk	78
Sales assistant	177
Sewing machinist	219
Launderer	984
Dry-cleaner	324
Presser	159
Carpet cleaner	231
Light truck driver	78
Heavy truck driver	63
Cleaner	138
Other	1,071
Total	3,834

Source: Statistics New Zealand's Census

b) Industry/occupation matrix

An “industry/occupation matrix” can be used to examine not only the occupations that are important to an industry, but also within which other industries certain occupations occur. This can be useful for determining how industry-specific are the skills in the occupations covered by your ITO, and possible synergies in skill sets between your ITO and other ITOs.

Table 3 shows an example industry/occupation matrix for the laundries and dry-cleaners industry. It shows employment in those occupations previously identified in Table 2 ie those within which more than 50 people were employed in 2001 in the “Laundries and Dry-Cleaners” industry. However, in addition it identifies those industries which employed more than 50 people in two of the key occupations associated with the laundries and dry-cleaners industry ie “Launderer” and “Dry-Cleaner”. You should note that only those industries/occupations which meet these two criteria are identified – otherwise it would be a matrix with 604 rows and 476 columns!

Table 3 Industry/occupation matrix – laundries and dry-cleaners industry
Employment, 2001

	Supermarket	Hotels	Motels & motor inns	Secondary Ed	Hospitals	Health services	Accommodation for the aged	Laundries and dry-cleaners	Total
General mgr	339	97	81	21	177	207	147	147	43,074
Retail mgr	1,818	24		33	6	15	6	72	29,121
Technical rep	177	24	3	9	60	48	3	93	16,290
General clerk	492	81	33	483	1,272	82	255	78	55,308
Sales assistant	12,354	72	24	51	36	48	27	177	85,530
Sewing machinist		6		9	21	6	12	219	8,799
Launderer	57	147	51	51	276	51	261	984	2,325
Dry-cleaner		6				3	3	324	375
Presser				3	3	3		159	570
Carpet cleaner								231	393
Light truck driver	42			3	12	12	9	78	2,031
Heavy truck driver	12	3	3	3	18	9	6	63	22,686
Cleaner		945	2,355	834	528	492	771	138	32,721
Total	34,377	11,715	11,715	28,866	40,710	25,629	20,193	3,834	1,727,271

Source: Statistics New Zealand's Census

Notes: (1) The industries selected are those with more than 50 people employed in either the "Launderer" or "Dry-cleaner" occupations. The occupations selected are those with more than 50 people employed in the "Laundries and Dry-Cleaners" industry

(2) The totals of each row/column include employment in all the occupations/industries not shown in the table. The sum of each row/column therefore does not equal the total indicated in the table.

The table reveals that the laundries and dry-cleaners industry accounts for 324 of the 375 (86%) of employees in the dry-cleaner occupation, suggesting that this occupation is very industry-specific. But the industry only accounts for 984 of the 2,325 (42%) of employees in the launderer occupation, with this occupation appearing in a number of other industries such as hospitals, hotels and accommodation for the aged. Some of the other occupations in the laundries and dry-cleaners industry, such as drivers and cleaners, are likely to be spread amongst an even wider range of industries.

So you can “slice and dice” the official data (the Census is probably most useful here) to reveal the occupations that occur within the industries relevant to your ITO, and the industries which contain the occupations strongly associated with your ITO. This will give you some sense of the make-up of the industry in terms of industry-specific and generic skills, and linkages with other ITOs’ industries and occupations.

c) Specific skills

In addition to the overall industry/occupation mix, research on the specific skill sets required by key occupations in the industries covered by your ITO, and how these skills are changing, is required. These skill sets are likely to comprise a combination of generic and industry-specific skills. The types of skill will obviously vary considerably by ITO and individual occupation.

This is “bread and butter” business for ITOs, and you are likely to have a significant amount of information already available in your ITO on this, for example via training needs analysis that have been conducted. Otherwise primary qualitative research (such as focus groups and/or depth interviews with employers and people in the relevant occupation) will be helpful to identify the relevant skill sets.

5.2 Supply of skills

In section 4.2, we identified a number of the possible drivers of supply of skills, both at an aggregate and an individual level.

As with the demand for skills, when you are researching the supply of skills essentially you are interested in the *number of jobs* (ie labour flows) and the *skills held* by people in those jobs. This latter point relates to the stock of people, or existing labour force, in an industry.

5.2.1 Labour flows

There is a continual flow of people in and out of an individual industry or occupation. New entrants can come from a variety of sources, including school leavers or students, people moving between firms and occupations, and migrants. Similarly people leave the industry or occupation for a variety of destinations or reasons, examples of which include retirements and changes of occupation (occupational wastage).

The *flow of labour* in and out of the industries covered by your ITO therefore may include:

- New entrants to the industry (eg school leavers)
- Retirements from the industry
- People of working age re-entering the workforce (eg returners to work)

- People moving from unemployment to employment
- People moving between firms (“churn”) and occupations (“occupational wastage”)
- Migration to and from overseas.

The relative importance of these labour flows will vary by industry, and the “mix” may also change over time.

It is important to try and understand the nature of the labour flows in the industries relevant to your ITO, as clearly each of the factors listed has slightly different implications for what training is provided and how.

Again, there is a considerable amount of data available from official sources in relation to labour flows – see appendix for details. For example, Statistics New Zealand produces migration data at a reasonable level of detail by occupation, although you will have to commission a customised data request to obtain data at this level of detail. Some of the flows can be inferred from official data; for example, retirements can be inferred from the age profile of an industry or occupation, which can be determined using Census data. And you can obtain data (enrolments, completions, location etc) from TEC or the Ministry of Education (MoE) in relation to provider-based training, and from within your ITO on industry training, to consider the entry of skills in the industry. However, other flows are more difficult to research from official data. For example, we are not aware of an official source of data for occupational wastage.

You could consider conducting or commissioning some qualitative research (eg interviews with employers, employees/potential entrants and training providers) to understand the nature of the flows and dynamics of the industry. You could also commission quantitative research to measure the flows, ideally to supplement data found from official sources. However, as noted previously, the latter in particular can be an expensive exercise, and you will need to consider the sustainability of the data and the (lack of) ability to conduct a comparative analysis with other industries.

5.2.2 Stock of labour and skills held

In addition to the flows in and out of the industries covered by your ITO, it is important to consider the people currently working in the industry and the skills they hold.

The demographic profile of an industry or occupation is important for a number of reasons. It is likely that the learning and delivery methods for an industry with, say, a young age profile will be different to that to one with an older age profile. In addition, the demographic profile of an industry or an occupation can influence the most appropriate recruitment and retention strategies.

For example, an industry that has previously targeted groups that are likely to decline in importance to the labour force (such as school leavers) may struggle to recruit new entrants in the future.

Similarly, it may be useful to understand the skills currently held (proxied by qualifications) by people in the industry. Both the level of qualifications and the type will shed some light on the training requirements. Census data is probably most helpful for considering the qualifications held at an industry or occupation level – see appendix.

5.3 Summary

This stage is concerned with conducting or commissioning research on the factors that you've previously identified as drivers of demand and supply. You may want to consider identifying what information's already available, then consider supplementing it with qualitative or quantitative research. Where possible, it is helpful to contextualise the findings and obtain comparisons between the industries/occupations covered by your ITO and all industries/occupations.

In particular, you may want to consider researching:

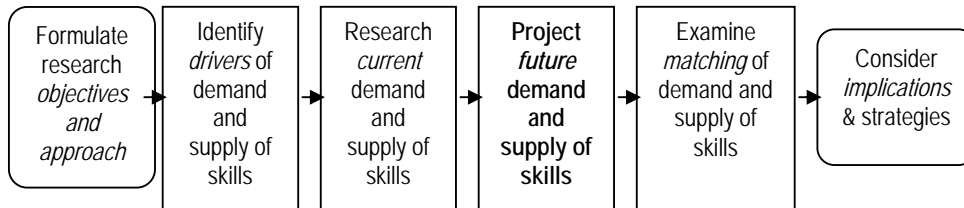
- How employment in the industries/occupations covered by your ITO is related to the drivers of demand
- The types of skill required, including an “industry/occupation” matrix to examine how industry-specific are the skill sets and possible linkages with other industries/ITOs
- The dynamics of the labour market – the factors that influence labour flows in and out of the industries/occupations, and the level of these flows
- The demographic profile and qualifications held by the existing workforce.

However, it is important that the data you're collecting enhances your ITO's understanding of skill needs, so that you're not collecting data for its own sake.

6. Stage four – future skills

This stage is concerned with future-focused research - examining the future outlook for the demand for and supply of skills in an industry.

Figure 8 Stage four - future skills



Source: NZIER

First up, it is important to note that anticipating skill needs can be challenging. However, we attempt here to provide some practical guidance on how to do so, and some of the benefits and pitfalls of potential approaches.

Although we've separated out this section from the previous section on current skill needs, it is likely that you would conduct much of the research and analysis concurrently. For example, if you commissioned some qualitative research with industry opinion leaders on skills-related issues, it is likely that you would ask them about current trends and the future outlook in the same study. Similarly, if you've discovered through desk research some overseas studies on skills in the industries relevant to your ITO, it is likely that these will have a future-focused component. We therefore only draw out differences here in sources and techniques from the previous section.

6.1 Qualitative research

Primary qualitative research techniques (eg focus groups, depth interviews) can be used to provide some useful insights in relation to the future-focused aspects of skills research.

For example, they are very useful for uncovering the likely *type* of skill needs in the industry in the future. These techniques are also helpful in *understanding* broader skills-related issues – what factors are likely to drive the future demand and supply of skills, strategies that can be developed to address the future skill needs of the industry, how the training system will need to change etc. However, they are unlikely to help you in terms of forecasting the number of people employed in an industry/occupation.

6.2 Informal assessment of future outlook

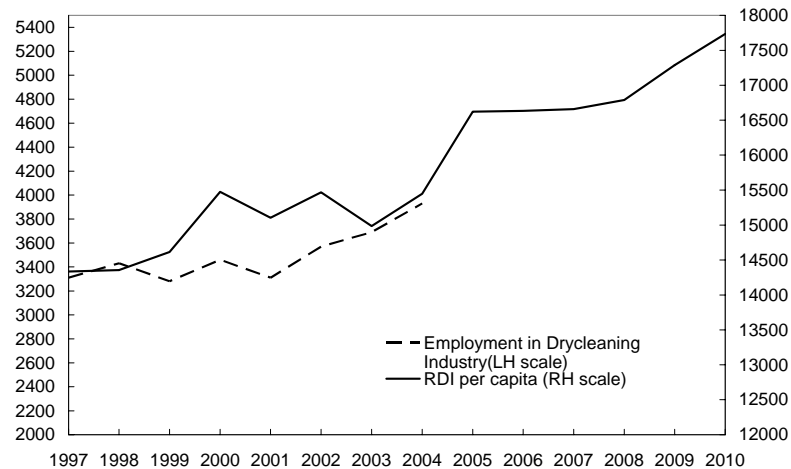
This approach (sometimes referred to as the “indicators approach”) involves taking data from one or more possible source to essentially form a view of demand and supply conditions, and therefore gain a *sense* of likely future trends.

The main benefit of this type of approach is that it can incorporate some element of judgement. For example, expert insiders (either from your ITO staff or your ITO’s stakeholder groups) can assess the data that you’ve assembled to try and identify possible future trends. It is therefore a good way of identifying “step changes” or the possible impact of external shocks. It is also likely to be a relatively inexpensive option. However, it is not particularly useful for projecting numbers – for example, the number of projected jobs in an industry. Having said this, it is likely that this type of approach will meet the needs of many ITOs.

If we turn to our hypothetical ITO, we can revisit the previous example in relation to incomes driving the demand for skills. Figure 9 shows the same data as that identified previously in Figure 7, but the real disposable income per capita series contains projections out to 2010. We can use the forecast series to provide some sense of possible future trends in employment in the laundries and dry-cleaners industry. This can be done by using the naked eye when looking at the diagram - sophisticated statistical techniques are not necessarily required to gain some sense of possible future trends.

Figure 9 Projected employment in the laundries and dry-cleaners industry

Employment (LHS), real disposable income per capita (RHS)



Source: Statistics New Zealand, NZIER

You should note that in the figure above the forecast series (ie real disposable income per capita) has been developed by NZIER, but there is a range of forecast data relating to a number of macroeconomic indicators freely available from the Reserve Bank, Treasury etc – see appendix.

A related judgement-based approach is the Delphi technique (see section 3.3.1d)), which uses an iterative survey with a panel of experts to obtain a consensus view on the issue being examined. One application of this technique is for forecasting, in this case trends in future demand probably being most relevant.

6.3 Quantitative techniques

There are a number of different quantitative approaches that can be used in relation to future-focused skills and labour market research. We touch on a few examples only briefly here, as you will probably need to commission an agency to undertake this work for you. Instead, we focus on the advantages and disadvantages of quantitative forecasting techniques in general.

6.3.1 Advantages and disadvantages

The advantages of quantitative modelling techniques include:

- By projecting known trends forward into the future, the full impact of these trends become apparent
- They can be used for “what if?” scenario testing, by altering the underlying assumptions of the model
- They provide a framework and discipline into thinking, and the process itself of developing the model can be valuable.

Some of the disadvantages include that:

- Every model has limitations, and no model can provide accurate long-term forecast of what *will* happen. It is important that the user is not “lulled into a false sense of security” by the seeming accuracy of the numbers
- Many of the techniques involve projecting historic trends forward, and so do not accommodate dynamic response mechanisms or step changes
- Too much information can overwhelm the user and make it more difficult rather than easier to focus on key issues
- Large volumes of quantitative information typically require complex analysis (the “black box”) and shift the focus onto the methodology of the analysis rather than its conclusions
- Large complex quantitative analysis inevitably uses a lot of resources.

Because of some of these methodological and other problems, there has generally been a move away in many countries from the “manpower planning” models of previous decades.

It is also important to note that, depending on the type of model used, the projections are only likely to relate to the industries/occupations covered by your individual ITO. It is therefore very important to have a “reality check” on the findings, to contextualise them and see if they make sense in terms of the wider economy. For example, if the model predicts that you need x number of new entrants to an industry, you need to be realistic about the likelihood of this happening in the broader labour market. These broader issues are the subject of the companion paper “*Research to support the ITOs’ leadership role – analysis of economic and social environment*”.

6.3.2 Overview of quantitative techniques

a) Quantitative surveys

A survey (telephone, postal, internet etc) of industry stakeholders can be used to identify future industry trends. For example, you could question a sample of employers about anticipated skill needs/skill shortages etc. This type of survey is most useful if it is conducted regularly so that trends can be identified, and its forecasting ability evaluated.

However, care needs to be taken with this approach. It is not always easy for respondents to predict the future, even in relation to their own actions. And employers’ responses to questions relating to skill shortages will usually be biased upwards. A one-off survey with no track record to evaluate its forecasting power may be of limited use, or even misleading.

b) Quantitative modelling

There are a number of methods of forecasting industry employment. Usually these involve estimating (often using proprietary macro-economic models) the future output demand in an industry, and the corresponding level of employment, based on various assumptions eg productivity growth.

One method that can be used is a simple model of net and gross labour requirements (based on historic training enrolment/completion rates, retirement rates, migration rates, occupational wastage rates etc) to meet projected demand. The benefit of this approach is that it is relatively simple, understandable and transparent. Conceptually it is useful in the sense that it differentiates between *replacement demand* for labour and *market expansion demand*. However, it may be difficult to obtain all the data (eg occupational wastage) and this type of model does not necessarily take account of any inter-relationships or overall constraints in the economy.

6.4 Summary

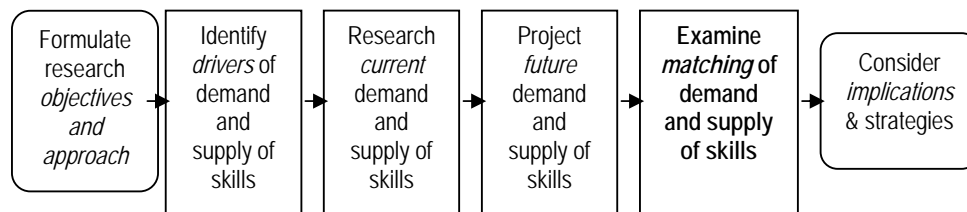
Anticipating skill needs is a challenging exercise. You need to decide on the most appropriate techniques for your ITO:

- Primary qualitative research (focus groups and/or depth interviews) to understand future skills-related issues and strategies
- An assessment of key indicators based on judgement. For many ITOs, this will be sufficient for their needs
- Quantitative techniques to forecast the number of people employed in an industry/occupation. Consider carefully if this type of research is necessary/appropriate for your ITO. If you do decide to progress, make sure you give the findings a “reality check”, especially in the light of wider labour market trends and constraints.

7. Stage five – matching demand and supply

The previous sections have been primarily concerned with researching the factors that influence the demand for and supply of skills in the industries relevant to your ITO. But what does the combined data you've assembled tell you in terms of how well matched are the demand and supply of skills? That is the focus of this section.

Figure 10 Stage five - matching demand and supply



Source: NZIER

7.1 Matching demand and supply – the theory

Economic theory suggests that wages should adjust to make the supply and demand for skilled labour “reach equilibrium”. So if there is a lack of skilled labour, then there should be increased competition between firms for the skilled labour, which in turn means that wages are bid up. This increase in wages encourages more people to train and this should in turn help to alleviate the skill shortage. Conversely, if there is an over-supply of skills (ie unemployment) then wages should fall and so less people are attracted to that industry/occupation.

But life does not always follow economic theory. Particularly in the short term, there are a number of reasons for mismatches between demand and supply, including imperfect information, wage “stickiness” and the time taken to respond to labour market signals and train new skills. This means that, in the short term at least, there can be a mismatch between the demand for and supply of skilled labour (see section 2 for a further discussion).

7.2 Analysing the match between demand and supply

You will already have some sense of the labour market dynamics in your ITO's industries from the ongoing informal dialogue that your ITO has with its stakeholders, and the findings of any research you've conducted in stages two to five of the research process. For example, if you've attempted to measure some of the labour flows (training enrolments/completions, migration, retirements, occupational wastage etc), you should have some idea as to whether inflows are likely to be adequate to meet outflows.

Similarly, if you've conducted stakeholder interviews on current and future skill needs, you will have gained a sense of how easy or difficult it is to acquire the skills that industry needs and the types of skills that could be in short supply.

In addition, there are a number of specific indicators of skills imbalance that exist that can help you assess job market conditions. These include:

- *Vacancy rates.* A high unfilled vacancy rate usually indicates some degree of skill gap/shortage. The Department of Labour undertakes a vacancy monitor which provides information at an occupation level
- *Wages.* The relative wage rate in an industry/occupation can provide some indication of the attractiveness of that industry/occupation. High wage growth is usually associated with a strong growth in demand for skills, which can indicate a mismatch between supply and demand. Statistics New Zealand's Labour Cost Index can be used to measure relative wage growth between broad industry groupings.

A range of other indicators can be used to contribute to the assessment of how well matched are the demand and supply of skills. These include working conditions, levels of sub-contracting, and hours and intensity of work. In addition, the Department of Labour undertakes research on labour market issues. For example, in February 2005 it produced skill shortage assessment reports in relation to 16 trades.

7.3 Summary

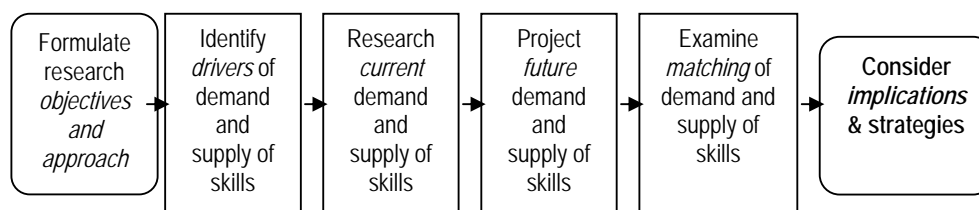
Examine how well matched are the demand and supply of skills:

- Review what the data you've assembled on current/future skills is telling you about the dynamics of the industry and the interaction between the demand for and supply of skills
- Analyse official data sources, such as vacancy rates and wage movements, to examine any possible mismatches between the demand and supply of skills.

8. Stage six – implications and strategies

So you've found a wealth of data which hopefully will improve the strategic understanding of your ITO in relation to current and future skill needs, and will provide a key input to your ITO's strategic training plans and industry skills strategy. You now need to work out what it all means for your ITO and the industry as a whole – the final stage of our research process.

Figure 11 Stage six - implications and strategies



Source: NZIER

You may be able to identify and develop strategies directly from the research that you've conducted to date (eg stages two to five). Alternatively, you may want to conduct some further research to assist with strategy development, possibly to ensure stakeholder buy-in. Whichever approach you adopt, it is important to consider the appropriate role of your ITO in the labour market of the industry it serves.

8.1 Research to identify and evaluate strategies

Two strategy- and action-oriented research techniques are qualitative research and action research, which we discuss briefly here.

Qualitative research (focus groups/depth interviews with industry stakeholders or cases studies with “successful” businesses) can be used to:

- Identify potential solutions to skills issues that you've discovered from previous (say desk) research eg future labour constraints, groups which are under-represented in training, low wage rates or poor industry image. These solutions may include improvements to the training system, and broader skill-related strategies
- Uncover any barriers or implementation issues associated with potential strategies, including determining the appropriate role of your ITO and other stakeholders.

Action research (see section 3.3.1e)) can also be a useful technique in evaluating potential strategies and solutions. This method is essentially a structured evaluation of an initiative/strategy, and so in simple terms can be thought of as similar to a pilot evaluation programme.

8.2 Role of your ITO in the labour market

The process of gathering labour market data implicitly assumes that your ITO has a role in the labour markets of the industries it serves. When developing strategies, it is therefore helpful for your ITO to reflect on the role it plays in the relevant labour market – see Table 4.

A useful starting position here is to recognise the role that open markets play in economic growth and society’s well-being. In other words, individual firms are usually best placed to identify changes in demand, and individual employees to respond to employers’ signals. This means that, in a broad sense, policy interventions are often focused on addressing some form of market failure, such as imperfect information.

Table 4 Possible role of ITOs in labour markets

Legislated role	Rationale for intervention by ITOs
Setting skill standards	Ensure quality, currency and relevance of training/qualifications for industry
	Facilitate matching process between employers and prospective employees - qualifications act as a screening device for recruitment (signalling skill level)
Monitoring and assessing training	Ensure outcomes achieved from training – maintaining quality and integrity
Identifying current and future skill needs	Ensure qualifications and training reflect industry's changing needs – they are current, fit for purpose and “future-proofed”
Developing strategic training plans	Identify changes to the training system (including the make-up/volumes of all types of training) required to meet industry needs eg assessment of strategic relevance
	Identify broader industry skills strategies (ie beyond training) in which ITOs may have a co-ordination role
	Identify groups where training is under-represented - to address equity issues
Promoting training	Increase the take-up of training, as industry training may be considered to be a “merit good” ¹
	Promote benefits of training to employers/ employees who may not be aware of them
	Promote industry to potential employees which may be done more efficiently by ITOs than individual employers

Notes: (1) A good whose consumption is encouraged because society’s optimal level is greater than would be made by individuals

Source: NZIER

8.3 Interpreting the results

The interpretation of the findings and the development of appropriate strategies will clearly depend on a number of issues including:

- The *original objectives* and scope of the research. If you've undertaken the research primarily to assist industry or inform your ITO's operational plans, the interpretation of the findings may be quite different from if you're seeking to influence tertiary education providers
- *What the research has revealed*. For example, the appropriate training strategies for an industry with declining demand for skills and employment and an ageing workforce will be quite different from that in one of market expansion and rapid technological change
- *Your ITO's perceived role* in relation to the possible strategies, and the role of others.

Any possible strategies developed need to be contextualised within the broader (New Zealand and where relevant overseas) labour markets, and economic and social environment. For example, if the future demand for skills in the industries relevant to your ITO is likely to be strong, these industries will need to develop some creative recruitment and retention strategies in a tight labour market. Strategies solely focused on targeting groups (such as school leavers) which are anticipated to decline in relative importance to the labour force in the future are unlikely to be successful. These broader labour market issues are a key focus of the companion paper "*Research to support the ITOs' leadership role – analysis of economic and social environment*".

It is also important to note that anticipating skill needs is a challenging exercise. In addition, with rapid technological change, there will always be a skills gap in the workforce. Overall, this means that the onus should be on ensuring that the training system is sufficiently flexible to respond to changing requirements. It also means that gathering information in relation to industry skill needs is not a one-off exercise.

8.4 Summary

Take stock of the research you've conducted to:

- Interpret the implications of the findings - what they mean for your ITO and the industries it covers
- Identify suitable training (and where relevant broader skills-related) strategies, possibly by conducting further research with your stakeholders. In particular, bear in mind the appropriate role of your ITO and the broader labour market context when developing any specific strategies.

9. Conclusions

This handbook has outlined a possible structure for you to consider when conducting skill-related research. The overall approach is based on identifying and researching the drivers of demand and supply of skills in the industries your ITO covers, and the dynamics of the relevant labour markets. We have suggested various research techniques (desk research, qualitative and quantitative research etc) to help you achieve your desired outcomes.

There are a few things you might want to bear in mind:

- *Formulating objectives and scope* is a crucial stage. It is important that the data gathered is action-focused and contributes to the strategic understanding of your ITO, as opposed to gathering data for its own sake. In particular, before you embark on any research you may want to consider the appropriate role that your ITO plays in the relevant labour markets, as this is likely to shape your research approach
- Identify *what information already exists* elsewhere, including the ongoing discussions which your ITO has with its stakeholders, before you commission any primary research. Use *official data sources* where possible, as this will enhance the credibility and sustainability of the research
- Obtain *comparative data* (for example compare the industries relevant to your ITO with all industries in New Zealand) where possible and *contextualise the findings* in terms of the New Zealand and overseas labour markets, as well as the broader social and economic environment. These contextual issues are the subject of the companion paper “*Research to support the ITOs’ leadership role – analysis of economic and social environment*”
- Consider conducting *qualitative research* (focus groups and/or depth interviews with stakeholders), as this can be useful in terms of understanding skills-related issues – the dynamics of the industries covered by your ITO, how well the training is working, strategies to address skill needs etc
- Exercise caution when evaluating the role of quantitative research, and consider whether or not this is the most appropriate research tool to meet your objectives
- Consider using an “*indicators*”/*judgement-based approach* (based on analysing a range of indicators to gain a sense of likely future trends) to identify future skill needs, as this will be sufficient for the requirements of many ITOs. Apply a “*reality check*” to any research that you conduct or commission in relation to future projections - anticipating skill needs is a challenging exercise.

Have fun and good luck!

Appendix A Data sources

Table 5 Data sources for skills-related research – New Zealand sources

Source/availability	Data series etc	Overview	Relevance to skills-related research for individual industries
<p>Statistics New Zealand</p> <p>Some data available at www.stats.govt.nz</p> <p>Otherwise may require customised data request (charge), especially at a detailed industry or occupation level - 0508 525 525 or info@stats.govt.nz</p>	Census	Primary source of information on the size, composition, economic activity and state of well-being of the population. Conducted every five years – latest 2001	Important source for analysing the supply of skills. Can provide a snapshot of employment at a detailed (5/6-digit) industry/occupation level – including demographic profile, personal income, region, qualifications held
	Business Frame/ Demographics Survey	Annual snapshot of the structure and characteristics of businesses in New Zealand	Can be used for analysing trends over time (including regional structure) in employment/number of businesses at a detailed (6-digit) industry level
	Household Labour force Survey	Quarterly information on employed, unemployed and those not in the labour force for the working age population	Provides up-to-date information on employment levels at a (3-digit) industry/occupation level. For broader measures, also provides many personal and labour market characteristics
	Quarterly Employment Survey	Quarterly measurement of the changes in average hourly and weekly earnings and number of jobs filled	Provides up-to-date information on employment and earnings/hours paid, for industry levels between 1 and 3 digits, sometimes more detailed. Some industries are excluded
	Labour Cost Index	Quarterly index measuring changes in base salary and wage rates over time	Provides up-to-date information on indexed wage levels at a highly aggregated (1/2-digit) industry level. Can therefore be used to compare wage movements in one industry with that across all

			industries
	Migration	Quarterly data on the number of permanent long term arrivals to and departures from New Zealand, and the characteristics of those people	Provides up-to-date information on migration trends at a (3-digit) occupation level
	Household Economic Survey	Provides data on household income and expenditure. Conducted every three years – latest 2003/4	Useful for showing changes in demand for household-facing products and services, and therefore indicating potential for growth or decline in the businesses providing them. Covers expenditure on a wide range of goods and services which can be analysed by household/individual characteristics (income, demographics etc)
	External trade statistics	Monthly data on the value of imports/exports	Can be used for considering demand for skills in industries where trade is important. Can provide very up-to-date indicators of manufacturing by industry or category
	Population projections	Estimates of the size and composition of the population at a future date	Can be used when considering future supply of labour (see labour force projections in particular)
	Sector-specific series	Varied – agriculture, building, retail, accommodation, manufacturing	Can be used for considering demand for skills in relevant sector
Department of Labour www.dol.govt.nz	Labour Market Outlook	Quarterly report analysing latest labour market trends	Provides analysis of broad labour market trends
	Skills in the Labour Market	Various reports assessing skills-related issues and skill shortages	Aims to identify industries/occupations/regions facing skill shortages

	External migration	Quarterly report on permanent and long term arrivals/departures and approvals	Provides analysis of broad migration trends
	Regional Labour Markets	Regular reports on trends and outlook for labour market in regions	Provides analysis of regional labour market trends
	Job Vacancy Monitor	Monthly survey of job advertisements	Can be used to consider mismatches in demand and supply at a detailed (5-digit) occupation level
Ministry of Economic Development www.med.govt.nz	Various reports on specific sectors (energy, communications) and government initiatives (Growth and Innovation Framework)		Provides context/background
Ministry of Social Development www.msdc.govt.nz	Various reports on social issues and government initiatives (Jobs Jolt)		Provides context/background
TEC www.tec.govt.nz Will require customised data request	Data on enrolments and completions in funded tertiary education courses and programmes		Important source for analysing flows of skills and type of training – by type of course, provider type, level, credit value, region. Some information on training outputs - completions
MoE www.minedu.govt.nz Will require customised data request			
NZQA www.nzqa.govt.nz	Data on credit achievement for NQF-based qualifications		Can be used to analyse training outputs – credit achievement

Will require customised data request		
Treasury www.treasury.govt.nz	Range of forecasts for macro-economic variables eg GDP, employment, inflation. Detailed assumptions and risks Various reports on productivity	Can be used when considering future demand and supply of skills
Reserve Bank www.rbnz.govt.nz	Range of forecast for macro-economic variables eg GDP, employment, inflation	
Commercial banks		
NZIER, Berl, Infometrics etc	Detailed range of forecasts for macro-economic variables	

Notes: (1) This list is indicative only and is not an exhaustive list. Visit the relevant websites for further information

Source: NZIER

Table 6 Data sources for skills-related research – overseas sources

Source/availability	Overview	Relevance to skills-related research for individual industries
NCVER www.ncver.edu.au	Various research reports on skills, training and labour market issues in relevant country	Provides analysis on skills-related issues plus some sector-specific reports
Department of Education Science and Training (previously ANTA) www.dest.gov.au		
Learning and Skills Council www.lsc.gov.uk		
SKOPE Economic and Social Research Centre www.econ.ox.ac.uk		
Sector Skills Development Agency www.ssda.org.nz		
Learning Skills Development Agency www.lsda.org.nz		
Skills Ireland www.skillsireland.ie		

European Centre for the Development of Education and Training www.cedefop.gr		
Bureau of Labour Statistics www.bls.gov	Research and data on labour market issues (US)	Provides statistics and projections at a highly detailed industry/occupation level
International Labour Office (ILO) www.ilo.org/	Research and data on population and labour force	Table-assembling system for detailed statistics by country
Centre of Policy Studies, Monash University www.monash.edu.au	Research and data on labour market issues (Aus)	Provides statistics and projections at a detailed industry/occupation level
OECD www.oecd.org	Research and reports on a wide range of economic issues	Provides analysis on labour markets and education comparing NZ with other countries

Notes: (1) This list is indicative only and is not an exhaustive list. Visit the relevant websites for further information

Source: NZIER

Appendix B Further reading

Australian National Training Authority. (2002) “Issues affecting skill demand and supply in Australia’s education and training sector.” National Centre for Vocational Education Research.

(2003) “National skills report: A discussion paper on the drivers of industry skill needs.” Sydney.

(2004) “National industry skills report.” Sydney.

Blandy, R. and Brett Freeland. (2000) “Is the stock of vet skills adequate: Assessment methodologies.” National Centre for Vocational Education Research.

Department of Labour. (1999) “Human capability: A framework for analysis.” Available at www.dol.govt.nz.

(2005) “Skills in the labour market – March 2005.” Available at www.dol.govt.nz.

(2005) “Job vacancy monitoring programme: 16 trade occupation shortage assessment reports.” Available at www.dol.govt.nz.

Keep, E. (2001). “Globalisation, models of competitive advantage and skills”. SKOPE Research Paper no 22. UK.

NZIER. (June 2005) “*Quarterly Predictions*”.

Ryan, C. and Louise Watson. (2003) “Skills at work: Lifelong learning and changes in the labour market.” Department of Education, Science and Training working paper 03/14, Australia.

Workplace Productivity Group (2004) “The workplace productivity challenge”