DEVELOPING AND RUNNING AN ESTABLISHMENT SKILLS SURVEY

GUIDE TO ANTICIPATING AND MATCHING SKILLS AND JOBS VOLUME 5

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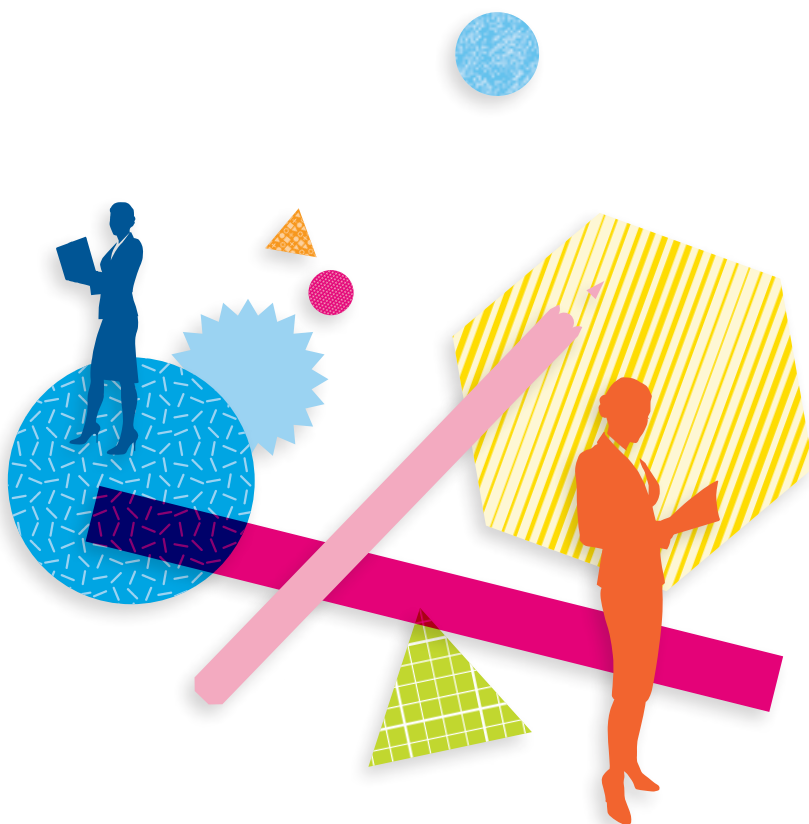
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DEVELOPING AND RUNNING AN ESTABLISHMENT SKILLS SURVEY

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Ferran Mane and Teresa Corbella

FOREWORD

In a context of dynamic and complex labour markets, gathering intelligence on current and future skill needs can support better matching of training and jobs, which is of paramount importance for every country in the world. In recent years, better understanding of labour market needs and skills matching have featured prominently on the policy agenda of many countries, driven by both rapid technological advances and global competition. Skills matching can also help reduce unemployment, particularly among young people. It helps to build a better life for individuals by improving employability, social mobility and inclusion.

The European Union (EU) places great emphasis on skills anticipation and more accurate matching capabilities. The Europe 2020 strategy and, in particular, the Agenda for new skills and jobs, recognise that anticipation and matching approaches and methods can help develop a skilled workforce with the right mix of skills in response to labour market needs, in a way that promotes job quality and lifelong learning. The EU Skills Panorama, launched in 2012, supports the effort to provide better data and intelligence on skill needs in the labour market.

The tripartite representation of International Labour Organization (ILO) Member States agreed that countries which have succeeded in linking skills to gains in productivity, employment and development have focused their skills development policy on three main objectives:

- matching supply to current demand for skills;
- helping workers and enterprises adjust to change;
- building and sustaining competencies ([1]) for future labour market needs.

Such a strategy includes anticipating and delivering the skills that will be needed in the future. The ILO/G20 training strategy *A skilled workforce for strong, sustainable and balanced growth* (ILO, 2010) recognises anticipation of skill needs as one of the principal building blocks of effective skills development systems.

Skills matching is a complex and dynamic process involving multiple stakeholders making a range of decisions at different times: individuals and their families, as they make decisions regarding their own education and training; education, training and labour market policy makers, as they decide on the configuration of education and training systems, employment policies and investments; training institutions, as they determine the type and content of the training courses to be delivered; and employers, as they assess how to train workers and utilise skills.

Jobs are changing rapidly and individuals are also changing their skill sets, either through education and training or through their work and life experience. Education and training systems, in particular, have a key role to play in ensuring that opportunities are provided for all individuals to develop their skills continually in a context of lifelong learning, enabling them to adapt to rapidly changing labour market requirements and conditions.

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[1] The terms competency(ies) and competence(s), although slightly different in meaning, are used interchangeably throughout this publication.

Given the complexity and dynamics of the process, perfect matching between skills demand and supply is neither feasible (especially in rapidly changing labour markets and economies) nor necessary, given the fact that many people can do many different jobs and many jobs can be done by people with different skill sets. However, it is important for policy makers to be aware of the importance of reducing the risk of creating large skills gaps that undermine the employability of individuals and impede the productivity of enterprises and the growth of economies.

International experience suggests that a comprehensive labour market information system (LMIS) is the backbone of any education and employment strategy, but no single methodology can generate sufficient knowledge of labour markets to avoid or minimise skills mismatch. The right mix and complementarity of different methods is essential for a reliable and comprehensive overview of skills demand and matching.

For developing and transition countries, skills matching and anticipation is becoming an even more complex task given their particular socioeconomic conditions and their weak institutions, capacities and governance systems. Many developing countries have limited labour market information, and more effort and investment is needed to build robust information systems. At the same time, even limited evidence can be more efficiently used with proper methodological tools and analyses.

To respond to these challenges, the European Training Foundation (ETF), the European Centre for the Development of Vocational Training (Cedefop) and the International Labour Office have joined forces, combining expertise and geographic coverage, to develop a compendium of methodological guides on anticipation and matching of skills supply and demand:

- Volume 1: how to use labour market information

- Volume 2: how to develop skills foresights, scenarios and skills forecasts

- Volume 3: what works at sector level

- Volume 4: what is the role of employment service providers

- Volume 5: how to develop and run an establishment skills survey

- Volume 6: how to carry out tracer studies.

The six guides complement each other. They include both qualitative and quantitative approaches, and advocate strong social dialogue and institutions that are conducive to better understanding the skills needs of tomorrow. They target professionals, policy makers, research commissioners, social partners and experts who require an overview of how different anticipation and matching methodologies can generate reliable labour market information, and how information and evidence can be analysed and used for the development of policy interventions or adjustments in education and employment strategies.

The compendium brings together state-of-the-art good practice and experience from around the world. The most common approaches used for skills matching and anticipation in different economic and country contexts are reviewed, and their potential and methodological shortcomings for generating reliable data and information are examined. They serve as reference material for readers to explain the scope, added value and limitations of diverse methodologies. The guides also provide insight into how the results of different methodologies can be analysed to provide recommendations and policy formulations.

Any feedback from readers and users of these guides is very welcome, particularly regarding how the next editions could be improved or made relevant to their circumstances and policy dilemmas; how they are used in different countries and contexts, including especially in bringing stakeholders together; and which topics could be added in the future to complement the current compendium.

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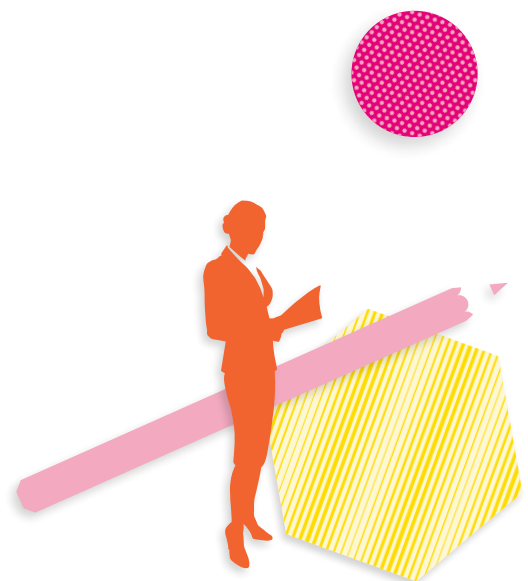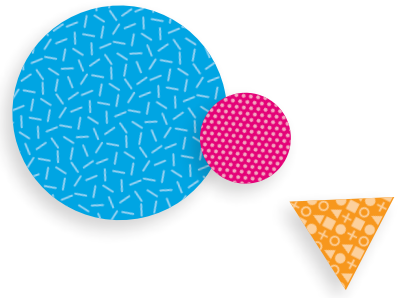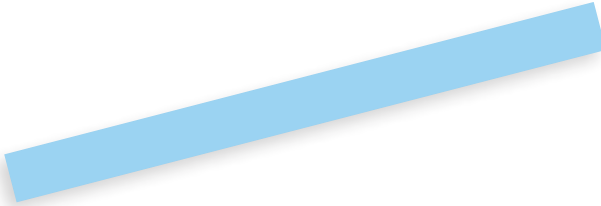
TABLE OF CONTENTS

LIST OF FIGURES, TABLES AND BOXES

Figures

Tables

Boxes

EXECUTIVE SUMMARY

The importance of skills for individuals, enterprises and society as a whole is well accepted. Further, there is robust empirical evidence showing that skill gaps and skill shortages can be highly damaging. Timely and reliable labour market information on the current skill endowments of the workforce and how they will develop in the coming years is essential to prevent problems.

The main issue, however, is the difficulty in measuring and forecasting skills: a leading strategy to tackle such challenges is undertaking employer/establishment skills surveys (ESSs), collecting information on enterprise skill needs and workforce development strategies.

An ESS is a mechanism that helps to define the type, level and composition of skills that individuals need to perform the work demanded by enterprises. It can also help investigate future skill needs and analyse the relationship between enterprise characteristics and the creation of skills needs. Such information can empower policy makers to design much better training and labour market policies and enterprises to develop modern human resource management strategies.

This guide provides information to help those institutions running an ESS to consider what is necessary in each phase of its development. Though not a substitute for the necessary knowledge and expertise to run it, the guide can be used as a tool to monitor the ESS implementation by consulting firms, national agencies, universities or similar institutions. It provides hints and methodological discussions on the main issues in each phase of survey development, the decisions that have to be made and what the results of each phase should be.

Before implementing an ESS, it is important to have a clear understanding of specific aspects: what are the main objectives; which partners are needed to carry out the project and who will play the leadership role; and is access to technical and financial resources assured for all the different phases? Special effort must be directed to defining an ordered list of objectives that is flexible but also has the goal of limiting the scope of the survey. This list of objectives must be 'mapped' to the needs of stakeholders and end users through the definition of specific outputs and deliveries.

Once process planning has been done, questionnaire design follows. There are several key decisions to be taken – essentially, from whom the information should be obtained and the list of skills that should be covered. We then must agree on which modules (specific areas of analysis) will be included in the survey and insert in each one questions reflecting specific survey objectives. At this point we should be able to discuss our draft questionnaire with informed people.

The next task is to select a well-defined set of establishments to study (the sample) and choose a sampling methodology. This is a highly technical part of the process and it needs to be done by professionals with a high level of expertise. It may be necessary to accept a less than perfect source of information to generate the sample. Lack of or poor quality information should not invalidate the whole survey, but it is important to be familiar with the sample's problems and defects and take them into consideration when the data is used to derive conclusions.

Data collection must be carefully planned. It is useful to have employers and employers' associations involved in the survey and committed to its success. A pilot can be run, with the results used to check the validity of the questionnaire and methodology. Caution must also be exercised in designing and executing data storing and quality control. Data analysis must be split into three phases: internal quality analysis, checking the quality of the data; descriptive results, which consist in computing indicators and other measures and summarising results relative to other values (benchmarks if possible); and conceptual analysis, to establish relations, causes and correlations. After this analysis, results will be ready to disseminate.

The final phase is evaluating, reporting and disseminating results. The first step is to evaluate the process, to assure that it has been conducted correctly (legally and economically speaking) and activate the learning dynamics for future editions of the survey. Second, results must be reported and conclusions reached. Reports should be designed to suit the needs of different end users: this part should be open to the participation of selected stockholders, using their valuable inputs and keeping them engaged in the project. Finally, results must be disseminated, ensuring that they reach all end users. Dissemination should be used as a mechanism to activate a debate.

INTRODUCTION

We live in an era of ever-faster changes: continuous technological developments, most notably information and communication technologies; an accelerating process of economic globalisation; changing patterns of competitive advantage; increasing quality standards expected by consumers; and demands to improve the quality of public and private services. For emerging and developing economies, these circumstances might even be more demanding, as they have to deal with them with a less structured set of social and economic institutions.

In this context, there is broad consensus on the importance of skills for individuals, enterprises and society as a whole. It is claimed that without a highly trained and skilled workforce there is no chance of sustaining a strategy based on innovation, growth and cohesiveness. Numerous reports and studies show that skill gaps and skill shortages can be highly damaging to enterprise productivity, turnover and profitability.

'Skill shortages and gaps may prevent employers from filling posts or make employers accept staff with sub-optimal skills. The result will usually be that the organisation adopts sub-optimal working arrangements, and endures production cuts, lost orders, and dissatisfied customers. Concentration of skill problems in territories damages local productivity and competitiveness.'
Source: Cedefop, 2008.

Reacting to this general agreement on the importance of human capital, governments and institutions have been active in developing mechanisms to ensure that the correct flow of skilled workers is available to all types of enterprises, large and small. There are, however, difficulties in agreeing on what types of skills

are most important (once it has been accepted that just relying on education levels is not enough, and it is necessary to move into skills and competencies). There is also intense debate on how we best transform educational/training institutions; how we encourage enterprises to become learning organisations; and how we sustain individuals in adopting a lifelong learning perspective on skills upgrading.

Addressing our challenges requires evidence-based and credible data on human capital in general and available skills (quantity and quality) in particular. Such data are critical for policy formulation and planning. Besides, such data are to be used for monitoring and evaluating the progress and impact of human capital, developing interventions in facilitating the economic growth and social progress in the country.
Source: RDB, 2011.

To prevent skills gaps and shortages in the labour market and generally spur the transition of private and public institutions into efficient skills producers and users, timely and reliable information on the current skill endowments of the workforce and how they will develop in the coming years is essential.

Unfortunately, measuring skills use and forecasting related future needs is a highly complex endeavour. Traditionally, forecasting skills supply and demand has been done using the 'manpower planning approach', in which data from past and current workforces (and populations) are collapsed at occupation and sectoral level, and predictions on how this will evolve in the future are then made (see Volume 2 for more details on relevant quantitative forecasting methods). Though the results produced are useful, this methodology has its limitations. To complement forecasts by qualitative and

more detailed data, it is becoming increasingly popular to run an employer/establishment skills survey (ESS), collecting information on enterprise skill needs and workforce development strategies.

An ESS is an instrument designed to generate data on employer demand for and investment in skills. It helps define the type, level and composition of skills that individuals need to perform the work demanded by enterprises. This type of survey not only documents the skill content of current jobs, but, when the correct design is applied, it is also an appropriate tool for investigating future needs, by obtaining information on which type of occupations will be in higher (or lower) demand or which skills will be key in future workers' skills portfolios.

However, an ESS is not just a mechanism to describe the current and future use of skills in the workplace. It can also be used to analyse the relationship between enterprise characteristics and the creation of skills needs. This information can empower policy makers, practitioners and enterprises to develop much more proactive and long-term human capital policies and strategies.

Given the potential usefulness but also complexity of an ESS, it is important to provide a guide in which conceptual and technical issues can be discussed,

especially in developing countries where some restrictions on resources and capabilities may make the task of running an ESS even more challenging.

The guide has two main goals.

(a) To provide a general framework under which an establishment skills survey can be understood. The guide does not intend to be a 'scholarly' document, but it is important to consider that skills (and skill needs) reflect a series of decisions taken by employers on how they set their strategies in terms of products and processes.

(b) To provide practical guidance with examples for all the different steps involved in carrying out an ESS. Strictly speaking, the guide is not a user manual, but a discussion of the different decisions that have to be made and the potential alternatives available, which may fit well in some situations and not in others.

This guide is specifically about conducting stand-alone establishment surveys on a relatively significant scale. It is not, therefore, applicable as a whole to other types of skills establishment survey. Many detailed requirements for an establishment survey set out in the guide are not necessarily relevant to small-sample interview surveys focused on a single sector. However, it could still be a useful background resource for all types of skills establishment surveys, such as those that form part of many sectoral skills studies.

It will assist various users: high-level management in ministries and training agencies, deciding whether it is worthwhile launching an ESS; middle management overseeing the design and implementation of an ESS, either subcontracted or directly executed; and supervisors, team managers and analysts involved in the field work and/or data analysis. The guide discusses in detail who may be the final users of the information
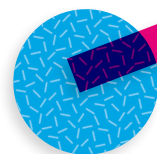
and knowledge generated, and how to tailor the different outputs accordingly: it does not perceive this group of end users just as employment services and training institutions, but advocates that employers and job seekers should be included among the main targets for data use. One important goal of an ESS should be to help national and local authorities to become informed actors in the discussion on how to transform enterprises into more efficient and competitive institutions, as well as to help policy makers adjust training design and offer.

A clear warning is necessary, however, regarding what the guide is not. It is not a substitute for the expertise and technical knowledge of institutions and individuals in charge of carrying out the survey. If the responsible institutions or individuals have the capabilities to run the survey, they will find in the guide information to help them consider critically what is necessary to do in each phase of development. However, if they lack the necessary knowledge and expertise, this guide will help them to oversee and monitor those who are in charge of devising the survey and know how to implement it (consulting firms, national agencies or similar). The guide provides hints and methodological discussions on the main issues in each phase of development, the decisions that have to be made, and what the result of each phase should be. Survey sponsors will be empowered to understand and critically evaluate the results and options presented by those implementing the survey, even if they would not be able to run it themselves.

This guide has already been initially tested in the field in three countries: Tunisia, Egypt and Tajikistan. The feedback received has been very positive. From the conceptual point of view, the guide has been praised as very useful in putting together all the different concepts and technical issues that have to be taken

into account when considering the implementation of an ESS. Most notable is satisfaction with the intent of showing that an ESS is not just an instrument to generate data but also a mechanism embedded in the wider national skills policy. The holistic approach we have taken in this guide has received plenty of support.

However, from an operational perspective, it may be necessary to adapt the guide to specific circumstances or stakeholders. Feedback from the ILO in the North Africa region prompted us to write a short introductory version of the guide targeted at top management officials in ministries, to draw attention to and attract interest in this type of methodology. In Egypt, the guide is being used as a starting point to analyse the specific skill needs of college graduates: it still provides a very useful framework for how to conceptualise the main issues to be considered and highlights the main problems, but more advanced work is needed to adapt the methodology and the questionnaire.

In Tajikistan, the ILO has promoted adaptation of the guide to the specific needs and capacities of employers and employment services. The goal was to provide support and capacity development to the Tajik government and other stakeholders in activities where an ESS is the main methodological instrument. Experience in Tajikistan has also demonstrated that the guide is a useful document for organising training activities. The clear structure and the step-by-step approach help to articulate a training programme. Moreover, it is very easy to introduce practical activities (country specific) that reinforce the understanding of the main technical issues and spur discussion on conceptual aspects. The guide therefore may serve as the core training material, but tailor-made hands-on training documents would be still useful to develop for each course.

Chapter 1.
Preparing for an establishment skills survey

In this chapter we briefly present and discuss the concept of an ESS. Although introductory, this chapter is important as sometimes an ESS is developed and implemented without a clear understanding of the appropriateness or the potential of the instrument used. Initially, an ESS is a complex methodology to obtain data which calls for a careful review of the conditions, both internal and external, that may eventually have some influence on the success of the project. It is also relevant to consider whether there is the capacity to analyse the data correctly and to assess the institutional strength needed to develop and implement the set of policies that may be derived from the accumulated knowledge.

1.1.   Concepts and contextualisation

1.1.1.   What is an ESS for?

The aim of an ESS is to collect data about enterprises' skills use and needs as information for policy makers and social actors (employers, employees, education and training providers and prospective employees) to maximise the economic value of skills and shape public and private investment decisions in education and training. An ESS goes beyond the simple detection of occupational changes and enquires about the type, level and composition of skills that individuals need to have for carrying out the jobs required by enterprises. The main objective of this type of survey is to contribute to effective future employment strategies by providing the necessary information.

In an ESS there is a shift of the traditional key informant in labour-related surveys from employees (individuals) to employers (firms), which opens up the possibility of obtaining detailed information on employer preferences for particular skills and worker characteristics. It is also employers who have the responsibility for which technologies and forms of work organisation are implemented and which products are developed. An ESS is a unique opportunity not only to describe skill uses and needs, but also to show a dynamic perspective on how they might change in response to different potential strategies.

This information lays the foundations for generating the knowledge that allows each of the actors in the labour market to adjust their strategies and actions to cope with the challenges they face.

(a) Policy makers can shape their education and training policies and also encourage specific human resource strategies:
- design of initial and continuing education using information on basic areas of expertise in emerging occupations and sectors, as well as upgrading and remedial education for specific segments of the workforce;
- design of active labour market policies: counselling/guidance and retraining for job seekers.

(b) Education and training providers (public or private) can receive updated information on skills demand:
- design of education and training programmes and skills standards, and changes in number of education and training places provided, to serve changing enterprise demand for new entrants;
- design of education and training programmes and skills standards to adjust skills of current workers in response to changing enterprise skills needs.

(c) Employers can compare themselves to others in terms of training provision or their experience of skills deficiencies, and identify key challenges and opportunities for their sector:
- understanding of skills needs drivers to establish the relationship between work organisation, product strategies, business positioning and technological changes and enterprises' skills and training needs.
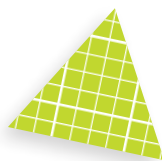
(d) Individuals (with the help of careers advisers) can identify skills areas that they might have to upgrade and sectors and occupations with specific skills shortages that offer good job opportunities:
- identification of skills gaps and labour shortages by level and type of education/ training to contribute to the knowledge generation on future skills needs.

1.1.2. References in ESS

Experience in ESSs is increasing, with more countries and international organisations sponsoring surveys of this type. Surveys generally have a national approach with broad sectoral coverage. In more developed countries with an already established LMIS, ESSs are viewed mainly as a mechanism to inform policy makers on how to better adjust labour supply and demand: the goal of developing highly competitive enterprises must include eliminating skill shortages or gaps and improving the management of human resources. In addition, developed countries have an increasing number of initiatives led by regional governments or sectoral organisations with a more specific focus and with the main goal of sparking debates.

In less developed countries there is clearer interest in gathering information to help set up mechanisms to increase the supply of skilled workers in the country. The interest is not just in potential skill gaps or shortages but on expanding the scope of available data on the skill base of the economy, often with a sectoral approach. In these countries it is important to engage enterprises in a discussion on how they can better use and expand the skills of their workforce. ESSs are not just a mechanism to generate high-quality data, but also an instrument of institutional transformation.

Both the institution leading the process and its personnel, skills and knowledge can be further used in the future. At the same time, it is important to consider carefully how different stakeholders can be engaged in both the survey design and in evaluation of the results, as a way of bringing these social actors together in a process of institutional transformation.

Examples of institution building
- Tunisia: a project centred on an ESS in the agricultural sector was used to bring together several government agencies to create a collaborative experience.
- Tajikistan: an ESS was used to provide technicians of the Ministry of Labour with first-hand experience on how to deal with labour market issues, as well as upgrading their statistical and analytical skills.
- Egypt: adaptation of an ESS by the Ministry of Higher Education provoked the connection between different ministries that eventually resulted in them collaborating in the project and mutual awareness of their needs and activities.

There are several interesting experiences in running an ESS, as seen in the following examples.
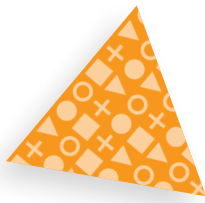
Table 1.   Examples of establishment skills surveys

Survey	Characteristics
Employer skills needs survey Cambodia, ILO Asia	National Employment Agency, one-shot survey, multisector (Bruni, Luch and Kuoch, 2013)
Rwanda skills survey, Rwanda Development Board (RDB), Rwanda	Rwanda Development Board, one-shot survey, all sectors (National Institute of Statistics of Rwanda, 2011)
Staffordshire Moorlands employer skills needs survey, Local strategic partnership (LSP), UK	Local government in UK, one-shot survey, multisector (BMG Research, 2011)
Employer skills survey, UK Commission for employment and skills (UKCES), UK	Regular every other year ESS for all sectors in the United Kingdom (UKCES: Employer skills survey, 2013)
Skills toward employment and productivity (STEP) skills measurement surveys, World Bank	Multi-country project. ESS developed along a household survey (Pierre et al., 2014)

Guides
Guidelines to detect skills needs of enterprises (ILO, 2008)
User guide to developing an employer survey on skill needs (Cedefop, 2013)

Source: The authors.

1.2.   Implementing an ESS: what to be aware of?

1.2.1.   Difficulties and precautions

The implementation of an ESS is similar to that of other surveys in terms of the possible general obstacles to success. However, there are specific questions that should be considered before committing either funds or efforts; clear understanding will help in the design and implementation of the ESS.

1.2.2.   Holistic view of the process

To conceptualise an ESS as purely designing a survey is of limited use. Although this may be a key element for the success of the project, the full potential of an ESS cannot be achieved unless the survey as an instrument is framed in a more general process:

detect problem → generate data → analyse data → provide solution

It is not just a matter of having a good questionnaire; it is important to have a clear understanding of exactly what the data is required for, to be able to produce a sound analysis of the information obtained, and to have the capacity to translate this knowledge into efficient strategies and policies.
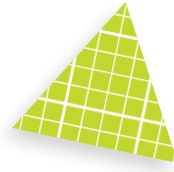
Figure 1. Steps in the development and implementation of an establishment skills survey

Preparing for the ESS → Designing methodology & questionnaire → Sampling → Data collection → Data analysis → Evaluation, reporting & dissemination
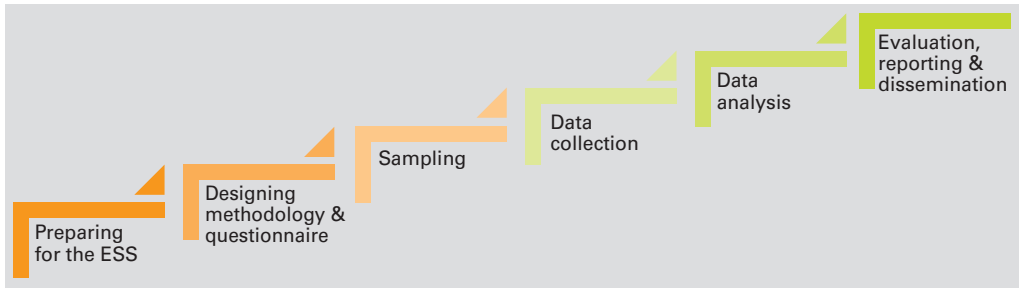
Source: The authors.

1.2.3. Expensive and complex

Developing an ESS is a complex and expensive endeavour: the financial resources and technical capability for all the phases of the process must be available. If there are reasonable doubts that this might not be possible, it is advisable to look for alternatives that may mean that the survey does not necessarily have to be abandoned. For instance, a more gradual approach can be taken by starting with a simple version of the survey that is less demanding in terms of resources and technical expertise, and developing the conditions required to eventually implement a more complex and ambitious survey.

Another possibility is to establish alliances with external public or private institutions to obtain help with each phase of the survey: design; implementation; data analysis and policy development; and follow-up of policies derived from data analysis.
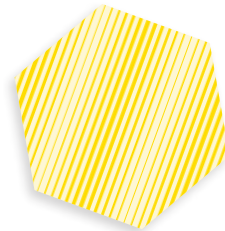
Table 2.   Survey phases

Phases	Outputs	Financial resources	Technical capacity
Design	Sampling frame, questionnaire and manual	Moderately high. Use past experiences to reduce	Highly complex. Key role for national statistics office and external experts
Implementation	Field work and data, cleaned and fed into outcome tables	Very high. Depends on the level of outsourcing	Moderately complex. Potentially in-house resources
Analysis	Evidence-based conclusions and recommendations	High	Highly complex. Cooperation between in-house experts and external consultants
Policy/programme changes	New or upgraded policies and programmes	Moderately high	Moderately complex. Cooperation of all social partners

Source: The authors.

1.2.4.   Data analysis

Consideration should be given to the difficulties involved in extracting all the potential knowledge from the data, translating this into actual policies and changing the behaviour of enterprises and individuals. The information collected has less 'direct' meaning than in other, more typical, surveys, which imposes greater demands on data analysis. It could be argued that having the data is a necessary condition for sound analysis, but by no means is it a sufficient condition. Before committing to undertaking an ESS, it is essential to start with a fair assessment of the institutional capacity not only to generate the data but also to use it. Alternatives based in qualitative research could be considered, as organising a survey is much more expensive and complex than organising qualitative research.

1.2.5.   Country-specific constraints

There is a series of country-specific circumstances that could potentially become a challenge to a successful ESS, or at least demand serious consideration:

(a) a large informal economy;

(b) a low level of formal education among the population;

(c) weak training institutions and infrastructure;

(d) the absence of an up-to-date registry of enterprises;

(e) considerable presence of micro and small enterprises;

(f) geographic and sectoral diversity as the institutional infrastructure at micro levels could be very weak;
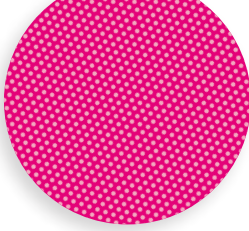
(g) weak employers' sectoral organisations, which are key actors in designing the questionnaire and recruiting enterprises to participate in the survey;

(h) underdeveloped public (government) technical capacity to analyse the data generated through an ESS.

These aspects should not be taken lightly. However, although they represent a challenge, they are not necessarily insurmountable barriers. If some are present, extra caution in the planning and implementing is needed.

1.2.6. Collaboration among different actors: leadership

Developing and carrying out an ESS needs the collaboration of several actors, both public and private. Different public bodies, ministries or agencies may be involved in designing and implementing the survey; later they may be part of the data analysis and policy development processes. Careful planning of the relationships and responsibilities allocated to each of them, and clearly defined and effective communication channels are recommended. A key aspect is to assign the role of leader of the process. Note that there are two 'types' of leaderships: the first would be of a more political nature, charged with ensuring both that the key actors in the process recognise the importance of collaboration and that the ESS is well (enough) founded. The second type is more related to the technical aspect of the ESS. Someone has to be responsible for making sure that all the key actors and participating employers remain accountable and engaged in the survey. Also important is the often neglected responsibility for ensuring that the discussions of the results and the corresponding design and implementation of policy reforms are carried out. This last part, however, must be done in cooperation with, and under the supervision of, the

'political leader', who may have to persuade different agencies or ministries to collaborate on policy reform.

Different approaches can be taken in dealing with this leadership challenge. In Tajikistan it was decided to keep the process in-house, through a partnership between the Ministry of Labour and its reference research centre, and with external backup, mostly technical, provided by international consultants under the supervision of the ILO. Several aspects stand out. First, the country is relatively small, which makes it possible to build strong relationships between different actors and create a sense of trust. In this case, it was important that employers considered the technical leader as a highly competent person (institution) and the ministry showed a clear connection to and shared responsibility with what the technical leader did. Second, the technical leader had the capacity to execute orders using ministry resources (financial and human), which set the tone for a strong leadership and sense of control. Third, the use of international experts was valuable in providing the programme executing team with technical support (without challenging their leadership) and also for explaining and disseminating in the public arena the characteristics and relevance of carrying out an ESS.

Egypt approached the leadership challenge differently. As a big country with an extensive government system, it was clearly more difficult both to define a goal for the project that would bring together several agencies or ministries and to establish an internal figure who could generate a common understanding of leadership. Instead, they decided to go for a narrow (albeit important) goal for the project and externalise the leadership and decision-making to a trusted institution that had the technical expertise to carry out the project. The ministry relied on one of its agencies to control and oversee the project and carry out the different steps to develop an ESS. A key aspect

underpinning this approach is having the capacity to discuss and agree all the decisions between the executing team and the external technical leadership.

Employers have a key role in ensuring success. Surveys aimed at employers must be well designed to encourage respondents to participate and to obtain good quality information. The lack of a tradition of such surveys and relatively low levels of capacity in public sector institutions makes this even more important in developing countries. Employers may be reluctant to participate in surveys due to time constraints or for privacy reasons: they may not want to disclose information they consider relevant to their business, they may be afraid of exposing themselves to competitors or fiscal or labour control authorities, or they may simply be reluctant for cultural reasons.

There are strategies to reduce the impact of these problems:

(a) establish contact with employers' representatives to build a partnership that engages their interest in the survey. It is important to obtain information about their perception of how relevant skills are for their development;

(b) keep the questionnaire simple and short. Balance the need for data against the time required to answer the survey;

(c) involve employers (or their representatives) in designing the questionnaire. Make sure to include questions that provide relevant information according to their opinions;

(d) design specific outputs targeting employers;

(e) develop a sense of ownership of the data among the employers;

(f) offer to share the results of the survey analysis with respondents.

Alongside the public sector and employers, two additional types of actor that should be involved in the project are training practitioners and research institutions, including universities. Both are strategic allies in extracting all possible information and knowledge from the data collected and converting them into successful recommendations and policies.

1.2.7.   Framing the importance of skills

To frame what can be done with the data collected, it must be understood that skills by themselves do not solve economic problems. There is evidence that skills have a positive impact on individuals in terms of wages and employment and on enterprises in terms of productivity and innovation. It has also been stressed that mismatch between skills supply and demand has negative repercussions on the economy. However, this does not imply that the demand for skills (skilled labour) is simply a matter of providing people with high levels of education or skills and letting the market play its role through changes in the relative costs of skilled/low-skilled labour. Skills demand needs to be modelled in a more complex and realistic manner, and seen as driven by an organisation's strategies. Such strategies, while externally constrained, are rarely imposed, and are therefore subject to managerial choices, beliefs and norms. Hence, the demand for skills is affected by strategic and cultural choices, as well as by the technologies that determine possible production processes; raising the supply of highly educated (or skilled) workers does not automatically result in a rise in workplace productivity, as these skills have to be effectively used and applied in the workplace. Neither can it be taken for granted that equipping individuals with more skills will automatically improve their well-being. This is an important consideration when designing an ESS, especially when enquiring about which enterprise characteristics drive the demand for skills and their efficient use.

1.2.8. General skill policies framework

An ESS should be part of a comprehensive system of tools and research on the various aspects of skills needs and skills enhancement. Both the design of the survey and the use of the data generated should be aligned with the broader public strategy on dealing with education and training system problems and development. An ESS also provides a good opportunity to engage employers in transforming the national skills system, especially considering the important role played by employer-led training in creating a space for workers in which to develop the skills they need. An ESS should be framed within a skills agenda that is shared with employers and not be exclusively government owned.

The following chart reflects the idea of the need to include an ESS within the broader country skills formation policy. It shows that the effort to undertake the survey should be aligned with the perspectives of the different stakeholders, mainly enterprises, in an integrated, systemic view of national skills formation systems influenced by government intervention.

Figure 2. Conceptual framework of a national skills formation system for knowledge-based economic development

Education and training system
- Ensuring relevance and employability
- Quality assurance
- Expanding access

Business community
- Workforce investment
- Workforce development

Qualitative and quantitative supply-demand match

Facilitate regular, on-the-job training and participation in skills formation

Link economic development with education and training system

Address policy, information or financial sources of underinvestment

Government
- Coordination
- Aligning macroeconomic policy with skills formation
- Broad-based, inclusive skills formation

Individuals
- Investment optimisation
- Lifelong learning

Source: Schwalje, 2011.

This concept of integration into the overall education, training and skills development policy framework has a practical consideration. It is important to have a clear understanding of related past and current initiatives, such as research and statistical projects, surveys and the availability of administrative data that could provide useful information. All these different sources of information should provide the knowledge base for survey design, but they could also expand the research undertaken with the data generated in an ESS once they are all matched in a single database.

It is also important to consider potential data overlapping situations. The first thing that should be checked is whether the data sought through the survey is already available from another source of data collection, such as a labour force survey or an existing establishment survey undertaken by the national statistical office. Such information should not be duplicated through the survey but complemented. Another consideration is whether there is the possibility of complementing an existing survey instead of launching a new one; an existing survey on training activities could perhaps be expanded to accommodate a few more questions. Care should be taken, however, not to overuse surveys. Trying to cover too many elements in the questionnaire may undermine the main purpose of the survey, increase the complexity and affect the quality of responses and the response rate.

Figure 3.   Section 1.2 key concepts
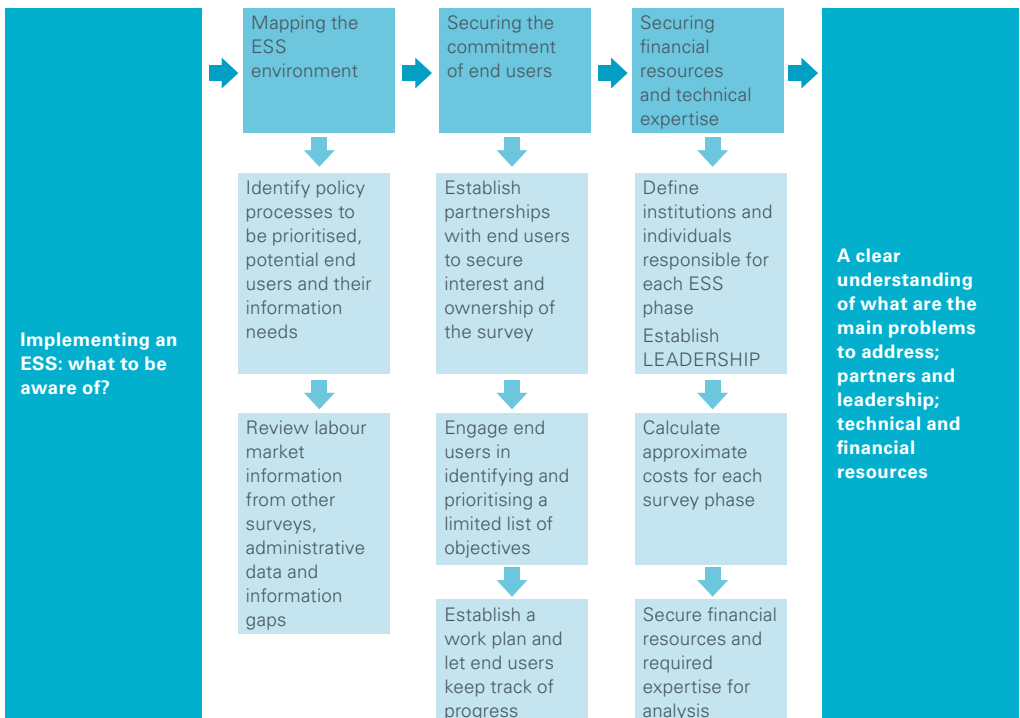
Chapter 2.
Design and implementation of an establishment skills survey

In this chapter of the guide we discuss how to design and put into action an ESS. There are several key aspects: a clear vision of objectives is a priority as these will eventually drive the selection of the questions for the questionnaire. The availability of a complete sample and the correct development of field work are additional aspects that are important to the success of an ESS.

We start with the objectives that an ESS may help to accomplish. We then turn our attention to the design of the questionnaire, presenting several key decisions to be made in relation to the main concepts underlining the specificities of an ESS. Even though every questionnaire will have to adjust to the concrete objectives pursued and the realities of the country/region/sector analysed, we detail the basic structure of an ESS: in this we do not set out a blueprint for the questionnaire, but discuss the concepts that should lead to it. An example of a set of questions for a questionnaire can be found in the Annex.

In this chapter we also discuss the process of data collection that starts with the definition of the research population and ends with storing the information. We concentrate on the sampling process. Even though an ESS may be handed over to qualified individuals/institutions, it is necessary to have a clear understanding of what must be done and how bad practice may jeopardise correct implementation of an ESS. We also briefly indicate some practical issues on data handling, particularly data entry.

2.1. Formulation of objectives and research questions

2.1.1. Defining final users and outputs

The initial decision on whether or not to conduct an ESS and the specific final questionnaire design should be informed by the sponsor's aims and their consequent operational objectives. Having a clear understanding of the outputs required from the survey before starting the design of the ESS is recommended. To achieve this, it is important to collect existing data from various surveys, noting the specific labour market issues they highlight and the information gaps identified. Review of labour market information from other surveys, administrative data (such as from employment services) and information gaps may show that other surveys already indicate specific labour market problems. Care should be taken not to repeat the same questions, but to target specific problems that have already been detected using other sources of information (even if this information comes from qualitative sources, such as key informants or employers' associations), and consider additional questions that may generate new lines of analysis. It is also important to document lessons learned from previous similar exercises. Other aspects to be considered include:

(a) the policy-making and strategy design processes that will be impacted by the survey findings and related recommendations;

(b) the end users of the outputs (institutional or individual) that will have to change their strategies to accommodate the policies and directions derived from the data analysis, including their information needs and the information format they will prefer.

Objectives should be differentiated from the survey purpose: for example, the survey will identify the skills in demand in a defined sector (objective), and identified skills will feed into the new national education policy (purpose). It is useful to have a hierarchy of objectives, reflecting the specific circumstances of the country, region or sector in which the ESS will be implemented. Although the survey may tackle different objectives, they will most likely be interrelated, which means that the same (or just slightly different) questions may be used to collect information aimed at different objectives. However, obtaining information to address all the objectives in detail may imply the inclusion of too many questions.

Recommendations
- Establish internally an ordered list of objectives. Conceptualise objectives with a tree-structure.
- Discuss the list with stakeholders. Let them have an insight into what should be the priorities, but keep control of the leadership of the process to avoid biases in the list of objectives due to specific interests.
- Keep the process open and flexible to allow changes once the design of the questionnaire starts. Reformulate objectives when necessary.

An ESS can help to tackle a long list of problems. To avoid useless or overly expensive surveys, a clear process of identification and prioritisation of objectives is needed, distinguishing short- and long-term objectives, with an emphasis on short-term objectives that can be built into longer ones. Excessively vague outputs (such as 'inform key actors of trends in labour demand') should be avoided and specific documents for each type of end user (policy makers, practitioners, employers and individuals) should be developed. It is also important to set achievable goals and to be aware of the limitations of a survey of this kind.

Depending on the objectives determined, the structure of the survey itself may be modified. A priority in Egypt was to elaborate a list of what would be the most in-demand degrees in the near future. Considering the difficulty of achieving a reasonable answer from employers to such questions, it was decided to split the survey into two phases: the first targeted the whole population of enterprises with a short questionnaire intended to collect information on future hiring (a poll type of survey); the second was aimed at a statistically representative sample of enterprises, using a more complex survey to collect detailed information on the characteristics and consequences of their hiring activities.

Analysis of surveys in developed and developing countries demonstrates a number of potential differences in their objectives (see Box 1).
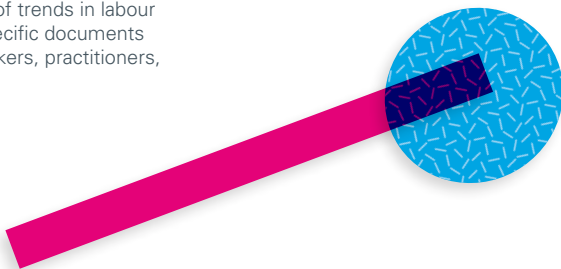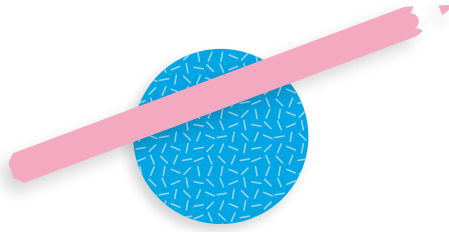
Box 1.   Defining objectives

Staffordshire Moorlands employer skills survey
- recruitment, including recruitment difficulties (skill shortages)
- skills lacking within the existing workforce (skills gaps)
- training, internal and external, including sources of training and information on training
- awareness and involvement in apprenticeships

Cambodian labour market: evidence from employer skills needs survey
- analyse the current Cambodian labour market situation
- asses the skills shortages and skills gaps in major occupation types in each selected sector
- explore employers' perceptions of first-time job seekers
- determine the employment structure in terms of stock and flow
- contribute to skills development programmes coherent with future labour demand in major occupation types
- verify the quantitative coherence between demand and supply in major occupation types

STEP skills measurement surveys: employer survey
- asses the structure of the labour force
- analyse work requirements and reported skill difficulties
- explore potential skill shortages
- identify the types of skills employers consider most valuable and the hiring mechanisms
- determine the tools used to screen prospective job applicants
- assess training practices
- determine work performance

2.1.2.   Specific list of objectives

Despite this diversity, we can establish a classification of objectives that could be used as a starting point for a detailed list of specific objectives for an ESS:

(a) describing the level and use of skills by current and incoming employees;

(b) understanding the drivers of skills needs;

(c) monitoring and evaluating the results of implemented labour market or education/training policies;

(d) anticipating future demand for skills.

To make this general group of objectives functional, it is necessary to detail what can be analysed in each one.

2.1.3.   Objective 1: describing the level and use of skills by current and incoming employees

The need to adjust employee skill levels and content to the characteristics of the job they are performing is well accepted. As employers define these job characteristics, they are the best informants on the extent to which this match is achieved. However, it is just not a question of asking whether this occurs but of investigating in which skill domains problems arise. As not all workers are alike but form a heterogeneous group of people, there is a need to classify them into categories (representing similar skills) to be able to analyse the results.

More precisely, the objectives could be:

(a) Work-readiness of newcomers. The objective is to determine whether or not enterprises can find workers with the set of skills they require in the labour market. Specifically:
  • see whether those leaving education and training reach the labour market with the set of skills required by employers;
  • enquire about vacancies and whether they are related to a lack of suitable candidates with the required skills.

(b) Skills characteristics of existing staff. The objective is to identify the proficiency of existing staff:
  • discuss the presence of skills gaps (Box 2).

(c) Employer investment in training. The objective is to identify training activities organised by employers.

(d) Occupational structure of enterprise. The objective is to obtain information on the different occupational groups in the enterprise and identify employment growth:
  • discuss the main characteristics of the employees in each occupational group;
  • measure the trend in occupational change.

Box 2.   Definition of proficiency

The idea of 'skill gap' is anchored in the concept of the employee being fully proficient. A proficient employee is usually defined as 'someone who is able to do their job to the required level'. This concept, however, is subjective and relative, in that different managers may have different views on whether an individual member of staff is able to do the job to the required level (even managers from the same organisation may have different visions). An employee could be regarded as fully proficient but if the requirements of the job change (for example, some new machinery or technology is introduced) then they could be regarded as not being able to do their job to the required level, despite the fact that their skills were unchanged; the same is true if a person is promoted to a more demanding position. The company might go from having no skills gaps to saying that this newly promoted member of staff was not fully proficient in the new job, despite having the same proficiency as before. Different companies may be more demanding and critical of their staff than others: an individual considered fully proficient by one company might be seen as having a skills gap if performing the same role to the same standard in another company. Some surveys categorise all staff as either fully proficient or not, taking no account of the range that can exist between those who are very nearly proficient and those who significantly lack the skills that employers require. While there is interest in raising the skill levels of the workforce, survey data can only identify changes year-on-year in the proportion of staff reported as fully proficient, not cases where skills levels have been raised but where staff still remain below full proficiency.

Source: Adapted from 'UK Commission's employer skills survey 2011: UK results: Appendix B'.
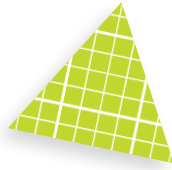
2.1.4. Objective 2: understanding the drivers of skills needs

Gaining a better understanding of the relationship between certain elements of the enterprise and the skills content of jobs is one key to survey success, as it should help recognise and frame the conditions in which employees use their skills and help identify opportunities for their development. Traditionally, skills analysis has been approached from the supply side, based on the individual. Questions on the drivers of skills needs recognise that enterprises shape not only the use of skills but also the development of new skills among their employees.

The determinants of skills needs are diverse but there is consensus that the most important factors driving the need for skills updating and improvement are:

(a) the introduction of new products or services;

(b) new working practices;

(c) new technology or equipment;

(d) increased competitive pressure in general;

(e) new legislative or regulatory requirements.

The main goal is to create a classification of enterprises using their scores along several dimensions of these factors as a scale. This classification can then be compared to the intensity of skill use, allowing better understanding of why some enterprises generate higher skills demand. This set of correlations would also help to predict under which circumstances the enterprise (and countries) may face future skill shortages.

With more precision, the key objectives are:

(a) Which specific working practices are related to each type of skill? The objective is to map specific skills with different working practices (Box 3).

(b) Which product strategies generate higher skill demand? The objective is to determine whether or not different product strategies imply different skills needs and training activities (Box 4).

(c) What is the effect of process and product innovation on the skills content of jobs? The objective is to gain better understanding of the impact of technological innovation on demand for skills, not only in a general sense of 'higher or lower' but in the more detailed sense of typology of skills.

Box 3. New working practices: work organisation

One common organisational change is often referred to as 'high-performance work systems', characterised by increasing employee involvement in firms. This implies workers becoming better informed about their employer, participating in discussion about immediate production issues or wider organisational matters, team-working, possible use of profit-sharing reward schemes or similar performance-based incentives, jobs designed for greater autonomy, and associated delayering of management functions. In terms of skills, a high-involvement environment is one where there is less direct control of employees' work, more need for workers to think proactively, and more scope for problem-solving. Also, there is likely to be increased need for interaction skills because workers are required to work together more, to cooperate with colleagues, to exchange information and express opinions. Associated with this more interactive environment, learning skills and inducing others to follow desired courses of action are becoming important.

Source: Green, 2012.

Box 4.   Product strategy and skills

The term 'product strategy' attempts to capture the choices made by enterprises about product or service differentiation within particular markets. Do they produce in relatively high volumes for a mass market or do they aim to be niche suppliers producing goods and services in relatively low volumes? In a related question, how customer-specific are their products and services? Do they attempt to compete at the lower-priced end of given markets or do they attempt to offer a high-quality product which will sell at a premium price? An 'enterprise product strategy' may be conceived as referring to the positions occupied by different enterprises on a series of spectra relating to value-added, complexity of product specification, volumes and price dependence, all of which may have implications for skill requirements.

In the context of competitive pressures to move up-market, policy makers need to pay particular attention to the adequacy of human capital supplies which may be needed to support the implementation of higher value-added product strategies. In many companies, the formulation of human resourcing and skills strategy tends to lag behind changes in product strategy, work organisation and production methods or service delivery. In these circumstances hitherto unrecognised gaps may start to emerge between current skill levels and those required for future success in competitive markets.

Source: Mason, 2004.

2.1.5.   Objective 3: monitoring and evaluating the results of labour market or educational/ training policies

Evaluation of policies being implemented is often neglected in ESSs, though the contextualisation that an ESS can give to the effects of the policy provides an excellent opportunity to do it. The problem is how to tailor questions to capture policies that may be either very general or very specific and relevant only to a small group of establishments (or workers). Initially, there are two options in evaluating policy effectiveness.

(a) Indirect: instead of asking about the 'inputs' (are you satisfied with the training programme?), enquire about the 'outputs' (are you satisfied with the worker?). Questions on the skills and preparedness of recently hired employees coming directly from education could be used as an indicator of the success of education and training policies.

(b) Direct: introduce specific questions worded in a way that the policy is clearly recognised. The UK employer skills survey has a question on whether the establishment is accredited with the Investors in People Standard [2].

The direct way seems more suitable for tackling concrete training policies undertaken by central or regional authorities; for more general issues it is better to use the indirect way.

With more precision, the key objectives are:

(a) What is the level of knowledge and use of a specific policy or set of policies? The objective is to get to know what the real impact of the policy is, both in terms of potential and in effective use.

(b) What is the reason for underuse or dissatisfaction with the policy? The objective is to reframe or reformulate the policy of interest.

(c) What is considered missing in the current set of policies? The objective is to establish a plan for the development of the institutional setting.

2.1.6. Objective 4: anticipating future demand for skills

One of the goals of an ESS is to improve anticipation of future skills needs. This is usually done by analysing changes in occupational structures and associated education levels (ILO, 2012). An initial step towards improving the current position would be to obtain a more detailed picture of which skills are associated with each occupation. This information can then be combined with external complementary data (for instance with labour force survey type of data) to forecast future skill needs. Alternatively, if the survey is organised to be repeated over reasonably short periods of time, it is possible to construct time series directly from the ESS data to estimate trends and use them as a tool to forecast the future. Similarly, the questions introduced to measure drivers of skill change, once correlated with current skill use, can also be used to predict future needs. Though possible, this is a more complex process as it is necessary to establish and measure the impact of changes in the use of different skill drivers (such as product innovation and technological change) on the skill demand.

It is assumed that an ESS should include direct questions that explicitly explore employers' opinions on whether they will need more skilled workers and which skills they will need to have. Though again possible, it is very important, if done, to word the questions so that they are as factual as possible, to avoid soliciting subjective opinions. Questions should be anchored to specific situations or changes, such as the introduction of new machinery. Also, it is important to ask about specific groups of workers, classified either in terms of skills or occupations. Information on training and vacancies can also be used to predict future needs, although the results should be considered with caution as they could be related to cyclical problems or be very short-term.

With more precision, the key objectives are:

(a) Map different scenarios for the evolution of labour demand, by skill and occupation. The objective is to get to know what the managers envision in terms of future hiring, considering the impact of different situations (replacement, growth, technical change).

(b) What are the determinants/drivers of future skill demand? The objective is to establish correlations between future skill demand and determinants of skill needs.

2.2. Defining the time scope of the survey

2.2.1. Should the survey be repeated over time?

An important consideration is whether or not the survey should be seen as an exercise to be repeated. This has important budgetary aspects as well as implications for questionnaire design, even more so in terms of policies that can be developed with regular or occasional surveys.

The initial scenario is one in which the ESS is carried out as a snapshot survey collecting cross-sectional data at one particular point in time. This is most useful for tackling current mismatches or gaps but, in highly dynamic economies with rapid changes in skill demand, the information collected may quickly become outdated. In such a scenario it is possible to obtain information to construct trends in skill needs by asking about past situations or by explicitly introducing questions on potential future demands. Caution is recommended: questions about the past put the respondent under some stress and answers may suffer from measurement errors. When predicting the future, respondents tend to express desires more than rationally calculated figures and may be influenced by what is considered socially acceptable. Therefore, including just very basic quantitative questions about the past is recommended.
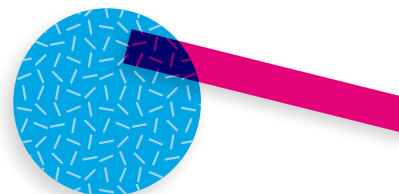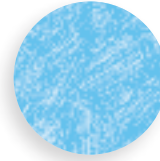
2.2.2. Advantages and costs of repeating the survey

The survey will gain a lot of explanatory power if it is repeated at regular intervals, ideally yearly. This will make it possible to detect changes over time (comparing situations based on information from previous surveys) and to react quickly by designing policy measures in response to observed developments. A regularly repeated survey not only provides timely and reliable information but also helps in two additional respects. First, it makes it possible to evaluate policies developed in response to problems detected in previous surveys; and second, it make it possible, once a sufficiently large number of points of information are collected, to set up a system of predicting future skill demands informed by analysis of past trends.

Repeating the survey obviously increments the costs incurred, especially if a yearly approach is taken. However, instead of viewing the larger budget allocated to the survey as a 'cost', it can be considered as an investment in building a strong capacity for monitoring and anticipating skills needs. Considering the analytical possibilities that a repeated survey brings about, it could be argued that this gives a higher return for the money expended. If budgets are tight, the following can be considered:

(a) extend the period between surveys to two or three years;

(b) reduce the number of questions to cut down costs but repeat it every year. The effectiveness of this possibility depends on how much costs decrease with the shortened survey;

(c) run a short version of the survey with only key questions every year and run a longer version every three or four years;

(d) reduce the number of enterprises surveyed (reduction of sample size), though the impact on representativeness of the sample has to be considered.

A yearly survey is good if there are no resource constraints. If there is a choice to be made between a yearly survey and no other major skills anticipation activities, and a less frequent survey with a good selection of skills anticipation activities, the latter will be the right choice in almost all circumstances.

2.2.3. Longitudinal or panel data?

Once it has been decided whether or not to repeat the survey over time, the specific approach must be chosen: does it require longitudinal or panel data? A repeated survey does not necessarily have to be designed as a panel survey (one that follows the same establishments in each wave). Longitudinal data (a series of cross-sections) may well serve the main purposes. The advantage of a panel survey is that it allows for more sophisticated research, in which observed and unobserved determinants of skills demand can be controlled for. This is obviously important but may not justify the higher costs, especially considering how complex it is to keep the sample statistically robust (to get a significant share of establishments to respond to the survey each year). As long as the sample definition and other important parameters are not changed between the waves, repetition with different sets of establishments each time is a good enough option. Further, for the purpose of tracking changes in skills needs, and with the hypothesis that newer enterprises may differ from older enterprises in terms of these needs, a panel approach could produce worse results than a longitudinal one, as it would need to carefully monitor the reshuffling of new enterprises in each wave to account for changes in enterprise demographics (this is done automatically in a longitudinal survey). In a panel survey, information must usually be collected at more regular intervals to take advantage of the type of data and also to keep track of changes in the composition of the sample. Longitudinal studies are not as demanding.

Box 5.   Alternative survey: employer-employee survey

An employer-employee survey is a dual survey that starts with a sample of establishments and then draws a sample of employees from within those establishments. Separate questionnaires are administered to employers and employees, covering a broad range of workplace issues. For instance, the employer-level questionnaire could be related to firm characteristics and strategies and the employee-level version could enquire about the use of skills (tasks). Thus, information from both the supply and demand side of the labour market is made available. The complexity of such an exercise is related mainly to how to engage firms to participate and how to succeed in achieving a statistically significant sample of employees.

Two employer-employee surveys recognised for they quality are the Workplace employment relations study (WERS) from the UK (www.gov.uk/government/publications/the-2011-workplace-employment-relations-study-wers) and the Workplace and employee survey (WES) from Canada (http://www23.statcan.gc.ca/imdb/p2SV.pl?Function=getSurvey&SDDS=2615).

Figure 4.   Section 2.2 key concepts
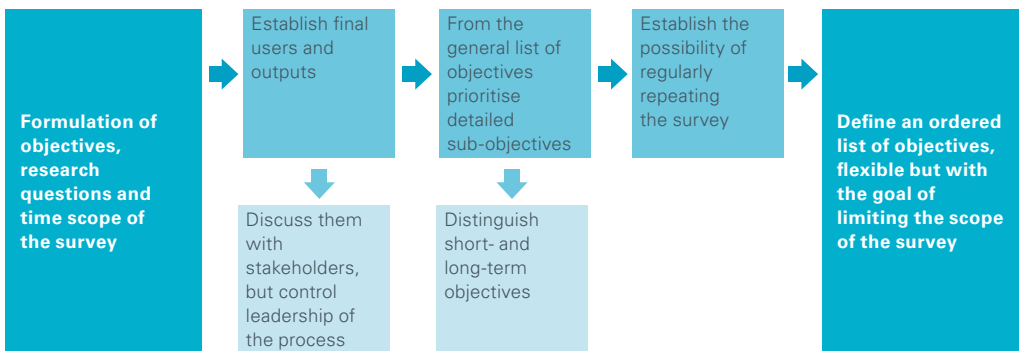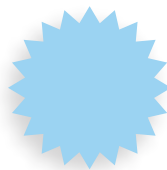
2.3. Designing the questionnaire

2.3.1. Questionnaire design

Designing a questionnaire is the process of converting the previously defined objectives into information categories and specific questions. The ultimate measure of a well-designed questionnaire is its capacity to generate the key information necessary to achieve the objectives while keeping the survey short. It is important to eliminate questions not directly related to the specific objectives, regardless of their intrinsic interest.

The process of designing the questionnaire for an ESS is similar to other surveys but there are a few specificities that have to be discussed from the outset.

2.3.2. Strategies to enquire about skills

One of the keys to survey success is to have an efficient system of worker skills measurement. The best way of measuring is testing workers on the different dimensions of the skills needed to perform in a job. Standardised tests provide clear information on the level and composition of worker skills, with the additional advantages of being comparable across workers and probably over different periods of time. Unfortunately, such a process is time-consuming and expensive, both in design and implementation. As a result, tests are replaced with other elements that are much easier to observe and related to skills. Some of these proxies for skills are occupations, levels or fields of formal education, typology of training or tasks. Each of these proxies determines a specific analytical approach.

### 2.3.3. Occupation-based approach

The idea is to obtain a detailed description (map) of the occupational structure of an organisation, focusing on two elements: workforce composition in terms of occupational structure and changes in this structure over time. Assuming that each occupation is related to

a specific type of education level and concrete skills needs (derived from external sources), it is possible to 'translate' occupations into current and future uses of skills. The main advantage is operational, as the category 'occupation' is usually well known and most respondents will have an idea of what is meant by the term; this helps to organise and implement the survey. In a situation of serious budget constraints (or weak technical capabilities in the agency responsible for the survey), the occupation approach has to be considered.

However, it poses serious challenges.

(a) Unless the occupation is defined at a highly aggregated level (such as ISCO level 1), most of the operational advantages of this approach will be lost as the firm may have a large number of occupations. Getting into a more detailed occupational breakdown imposes difficulties in assuring the statistical significance of the data obtained and also in the complex deployment of the survey.

(b) 'Occupation' is a traditional and, to some extent, static concept, but the content of occupations changes over time and becomes modernised; this cannot be drawn from the statistical category. Skills needed for a specific occupation change over time, and therefore the 'skill content' of an occupation, changes continually, partly invalidating the use of the category occupation as a proxy for skill.

(c) Standard occupational classifications are designed to be meaningful to statisticians more than to employers or employees, so correct and consistent coding of occupations can be a big challenge. Experience shows that even with coding done at the level of the individual employee (for example in labour force surveys), based on coding of job descriptions by experienced national statistical office staff, the results are often erratic and inconsistent, even at 1-digit level, and these problems get worse at more detailed levels of classification.
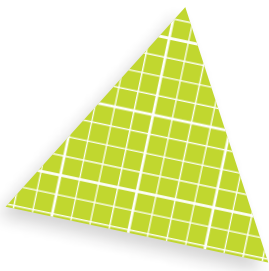
2.3.4. Vacancies-based approach

Employers are asked about current vacancies and the reasons for them. This provides timely information on employer skills needs and offers the most immediate way to assess the current needs of enterprises. It is important, though complex, to enquire about the reasons for these vacancies, as it must be discovered whether they are related to a lack of skills and competencies among job applicants or just the enterprise having difficulty attracting applicants (for instance due to poor working conditions or non-competitive salaries). This approach does not indicate which skills are required for jobs that do not have current vacancies; vacancies are also often defined through a list of occupations, again raising the problems encountered in the occupation approach. Another disadvantage of the vacancies approach is that it is highly susceptible to general business fluctuations. Finally, questions on expected future vacancies are usually included, with the intention of providing information to forecast future skills needs. However, employers may tend to overestimate future vacancies, casting doubts on the usefulness of including them.

2.3.5. Training-based approach

This describes the training activities of enterprises, providing information on current and future skills needs based on current or planned training fields and objectives. Training activity focus is usually on employees already working in the enterprise and newly recruited employees. However, in both cases, it is difficult to distinguish between the need for new and upgrading existing skills. Training content is also usually omitted from existing training surveys, making it difficult to establish a clear link between training and skills.

2.3.6. Task-based approach

This is based on the idea that tasks and skills are closely related, so skills are used when workers carry out tasks. Employers are asked about the tasks undertaken by a particular employee (usually defined by an attached job description), and this provides a characterisation of the skills needed to perform the tasks adequately. The task approach has the advantage that employers find it easier to think in terms of production processes, tasks to be performed and objectives to achieve, rather than in terms of skills. In addition, unlike skills, tasks can be directly linked to occupations. However, there are serious drawbacks to this approach. First, the setting and preparation of the survey is complex due to the diversity of tasks and the need to have a list of tasks in order to make comparisons across enterprises. Open-ended questions are not an alternative, as it would be a daunting task to collapse the responses into meaningful classifications. Second, tasks are very much job specific: it is not clear that employers have the information to respond correctly to what tasks their employees perform (other than a vague and generalised description), especially in medium and large enterprises. For these reasons the task-based approach has been used in surveys targeting workers, not employers.

2.3.7. Skills-based approach

This approach enquires directly about the use of a specific list of skills. Respondents typically rate the answers on a scale, in terms of either importance or frequency. Employers are considered good enough informants of workers' skills use, though workers themselves are the ones who know exactly what skills are used in the workplace. Employers can observe employees develop their activities and see what skills

they use and, even if there is limited direct observation, they are responsible for setting the work context (work organisation, technology) from which the skills needs emerge. The main problem with this approach is that the list of skills is basic and mainly generic, which rules out the investigation of occupation-specific skills.

2.3.8. Choosing the best approach

Each of these approaches have strengths and weaknesses. Though sharing the same underlying interest in enquiring about 'skills', they provide slightly different information. However, while they are not mutually exclusive, only one can be used as the driving source of information, or else the survey is too long. While the task-based approach is claimed as the best way of inquiring about skills, for a large-scale survey technical complexities render this possibility impracticable; a questionnaire design strategy using the skills-based approach, with questions formulated in such a way that employers can link them to tasks, is recommended. This offers a good compromise between quality of the information collected and practical considerations in terms of question complexity and questionnaire length.

Prioritising the skills-based approach does not rule out the possibility of having specific sections of the questionnaire using other options: questions on enterprises' training activities or preparation of young workers can be included using some of the other approaches if this is of value. Exploring potential complementarities among the different approaches depending on the specific aims of the survey is recommended.

2.3.9. Information origin

Once the strategy for enquiring about skills is settled, who will provide the information on skills has to be decided. The ideal is to collect information about all employees (or at least a representative sample) in an establishment. This is possible but extremely complex, both in terms of survey design and access to the target population. The problem is that each worker plays a specific role in the firm and so uses different types of skills. It would be complex and time-consuming to use an individual approach in which information is obtained for each worker and, in large enterprises, practically impossible. Consequently, the process must be simplified by implementing measures to select the target respondents. The aim is to collapse workers into groups to obtain information about the group and not about individual workers. The logical group is the 'occupation' as there are marked similarities in skills among workers doing the same job. It is also a category that employers understand and have to use frequently for administrative purposes such as contracts and wage scales.

2.3.10. Clustering workers

The first decision that has to be made is the level of detail in the definition of occupation. ISCO-08 ([3]) specifies 570 occupations, 120 minor groups, 34 sub-major groups and 10 major groups. The process of narrowing the definition of occupation faces a clear trade-off.

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[3] Resolution concerning updating the International Standard Classification of Occupations: www.ilo.org/public/english/bureau/stat/isco/docs/resol08.pdf
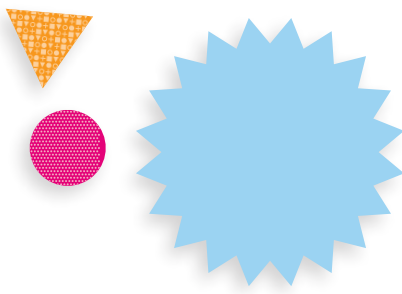
(a) More detail (at least 3-digit level in the ISCO classification):
- allows for the collection of data on vocational or technical skills to inform the technical and vocational education and training (TVET) [4] system better;
- should minimise measurement errors because each respondent will answer questions targeting a relatively homogeneous group. Therefore, the quality of the information provided should be better as the respondent would not have to 'average' employees with potentially different skills.

(b) Less detail:
- allows for the collection of data on a larger group of workers (or possibly all workers);
- vastly reduces the cost and complexity of the sampling process, as most enterprises will have workers traced under these broader occupational categories.

The trade-off is between precision and extent of information but the decision is constrained by the differences in the costs of implementing each approach. The 'detailed' option is much more complex and potentially expensive. This option should, perhaps, only be used in surveys that target a single sector or a small number of similar sectors.

Regardless of the level of occupation detail, in most cases, due to time constraints, some questions will not target the whole workforce but a selected occupational group (or groups). Even with the most aggregated occupation level, the number of occupations will still be 10, so certain criteria have to be used to select the occupation on which part of the survey will focus. There are two main options.

(a) Preselection of occupational group: employers will be asked to provide information for a specific group. The selection could respond to:
- statistical selection: the goal would be to have representative information for all groups, so quotas should be defined and assigned to each enterprise;
- content-related selection: based on quantitative criteria (quantitative importance of the group) or strategic criteria (most dynamic groups and/or most interesting groups in terms of skills needs research).

(b) Employer selection of occupational group: let the employers define the group of interest. This could be done by directly asking the employer which group is the most important or by introducing filters such as recent hiring in a specific occupation.

The option most often used is to work at a fairly aggregated level, unless the survey is just conducted in a small number of sectors, in which case the collection of more detailed data is possible.

Table 3.   How occupations are considered in questionnaire design

Survey	Occupational approach
Employer skills needs survey Cambodia, ILO Asia	9 groups ISCO-1 level (service and sales workers collapsed)
Guidelines to detect skills needs of enterprises, ILO Central and Eastern Europe	7 groups ISCO-1 level with some simplification (personal service occupations, associate professional and technical occupations and agricultural workers collapsed)
Staffordshire Moorlands employer skills needs survey, LSP, UK	9 groups ISCO-1 level (agricultural workers not considered)
Employer skills survey, UKCES, UK	9 groups ISCO-1 level (skilled agricultural collapsed in the trade workers)
STEP skills measurement surveys, World Bank	10 groups ISCO-1 level but only two occupations randomly chosen, one from a list of managers-professionals-technicians and another from the remaining occupations

Source: The authors.

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[4] TVET is an international term used to denote vocational education and training (VET). The two terms are used interchangeably throughout this publication.
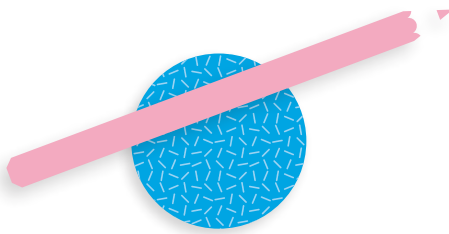
2.3.11. Core employability skills versus job-specific (technical) skills

Last among this group of key decisions on questionnaire design, the type of skills on which the survey is going to focus has to be discussed. However, once some level of 'clustering' workers into occupations is used, the possibility of analysing concrete job-specific skills is reduced as they are mixed among all the different workers included in the broader occupational category. There is the potential to define the occupational category precisely but, as indicated, that creates difficulties in ensuring the collection of statistically reliable data.

A complementary strategy of collecting qualitative information focusing on these job-specific skills can be used. Therefore, the main focus of the survey can be on core employability skills (⁵) (Brewer, 2013). However, this does not rule out inclusion of questions referring to the broader category of 'technical skills', though to make the information obtained on these skills operative, alternative sources of information for providing sector/occupation-specific meaning are needed. In this way it is possible to complement the information on employability skills included in the questionnaire with specific information on technical skills through different alternatives:

(a) use qualitative survey methods (for instance focus group discussions with key informants) to gather more information about specific technical skills;

(b) review the accuracy of national competency standards for strategic occupations, through focus group discussions with key informants (those working in these occupations or their supervisors);

(c) request employers to describe in detail the main technical skills either used in the establishment, or the ones they need (and leave aside other skills);

(d) establish lists of technical skills per sector through qualitative methods with employers and informants, and ask respondents to assess the capacity of their companies' workers in terms of these various competencies;

(e) introduce some customisation at the sector level in the questionnaire. To avoid coding problems and comparability across sector, instead of open questions use a closed list of answers with a map into common categories (for instance, in the case of technical skills, the list of skills for each sector should be bundled with concepts like product-related technical skills, technology-related technical skills, customer-related technical skills).

With respect to core employability, there is some agreement that it is impossible to devise a universally applicable set of skills because job requirements depend on, among other aspects, job type, firm size, industry sector and the worker's career stage. Nevertheless, the selection should be guided by the following aspects:

(a) keep the list of skills short;

(b) involve experts and stakeholders (employers and workers);

(c) consider some level of customisation at the industry level (or at least service-manufacturing) or at the aggregated occupation level;

(d) take into consideration broader policy initiatives, such as changes in environmental regulations, efforts to increase exports, and changes in educational or TVET curricula.

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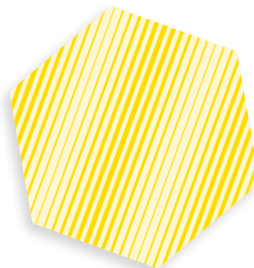
⁵ They are defined as '[…] the skills, knowledge and competencies that enhance a worker's ability to secure and retain a job, progress at work and cope with change, secure another job if he/she so wishes or has been laid off and enter more easily into the labour market at different periods of the life cycle. Individuals are most employable when they have broad-based education and training, basic and portable high-level skills, including teamwork, problem solving, information and communications technology (ICT) and communication and language skills. This combination of skills enables them to adapt to changes in the world of work'.
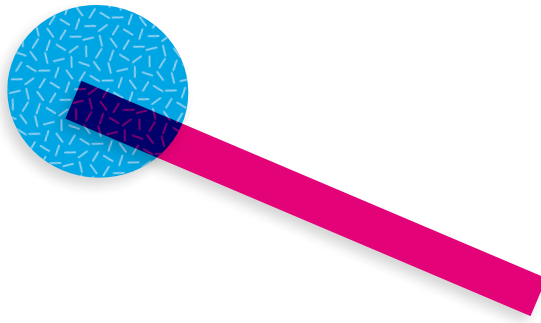
Figure 5.   Section 2.3 key concepts

Designing the questionnaire	Be familiar with the different strategies to enquire about skills	Decide from whom to obtain information	Establish the list of skills to enquire about	Establish targets in terms of typology of skills and employees
	They are complementary, but only one can drive the survey; the skills-based approach is recommended	Clustering workers is most probably inevitable	Find a balance between general and technical skills	

2.4.   Defining the questionnaire structure

2.4.1.   Basic elements of the structure

The questionnaire should be divided into modules or sections that reflect the specific areas of interest of the survey:

(a) basic information and workforce occupational structure and characteristics;

(b) recruitment;

(c) skills used by the current workforce;

(d) workforce development;

(e) demand for workforce;

(f) business strategy and structure.

These six modules represent the 'core' information that an ESS should aim to obtain. However, not all of these modules need necessarily be included:

(a) trade-off between extensive/intensive information: shorter surveys can target larger samples;

(b) trade-off between cost and information: shorter surveys are cheaper;

(c) balance between data and technical capabilities: this applies to field work and especially data analysis;

(d) trade-off between quality/quantity of information: shorter surveys have higher response rates and higher quality information.

Modules reflecting specific interests can also be added; for example, retention, skills of young workers, future hiring. Alternatively, several questions on these complementary aspects can be included in the main modules.

The order of the core modules should be designed to maximise response rates (considering a loss of quality in responses as the interview advances). More specific questions should ideally be left to the end of the questionnaire.

Figure 6.   Questionnaire structure

The content of the different modules, in detail, should be as follows.

2.4.2. Module 0

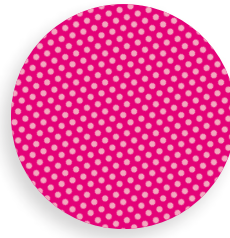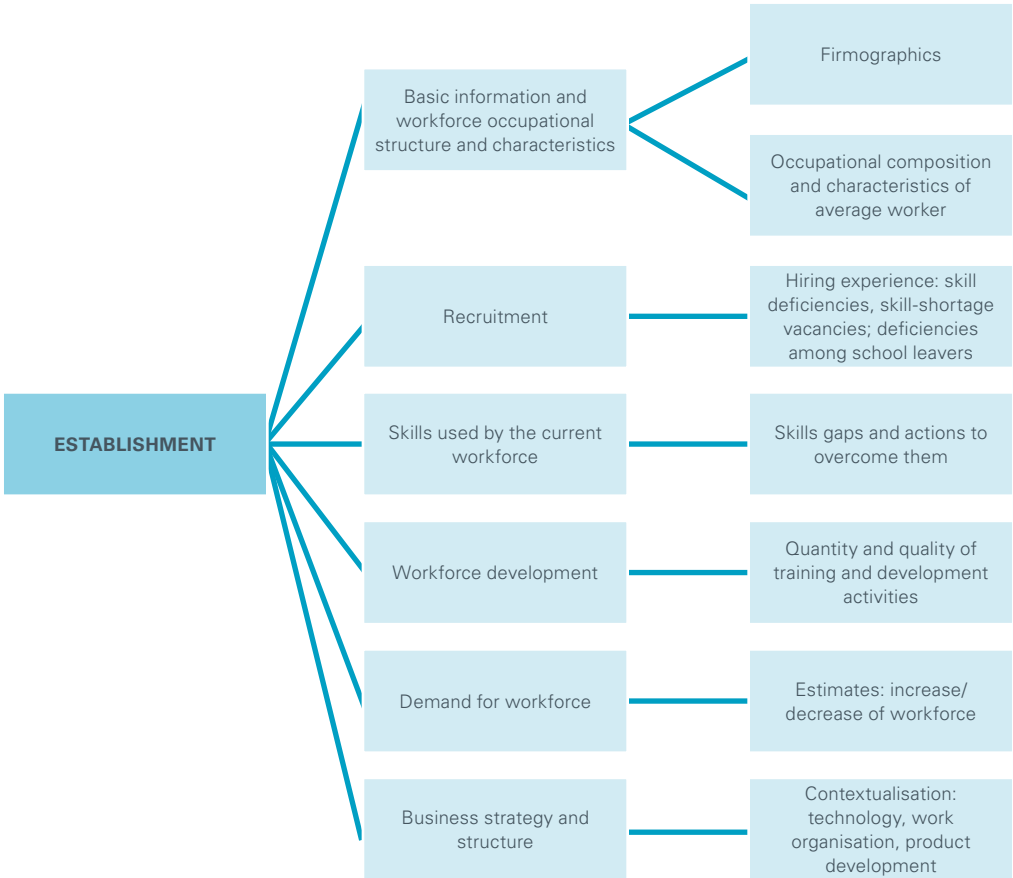The questionnaire has an initial administrative module (module 0) that records the name and address of the establishment, the details of the person who is responding to the queries, the location of the business, the details of the interviewer and the date and time of the interview. As these data are confidential, once the questionnaire has been verified for validity and consistency, module 0 is destroyed. Respondents need to be informed that data will be treated confidentially and that the information in section 0 is used only for quality control. If information from external sources has to be added to that already collected, a code must be created to identify the establishment. This process also has to be done for the rest of the data sets to be matched. This module also has to establish whether or not we are talking to a person knowledgeable about recruiting practices and skill development processes.

2.4.3. Module 1: basic information and workforce occupational structure and characteristics

This first section has two main goals:

(a) to collect basic information on the establishment ('firmographics');

(b) to ascertain the occupational composition of the workforce and the characteristics of the average employee in each occupational category.

2.4.3.1. Firmographics

Questions on:

(a) industry affiliation: this should be complemented with a description of the establishment's main activity and product/service;

(b) basic description of the establishment's background characteristics: ownership, size, duration of operations.

2.4.3.2. Occupational structure

Questions on occupational structure provide information that may already be known, for instance through household labour force surveys, other establishment surveys or administrative data sets. If this information is already available, there is still a need for questions to check the information given and also because one of the goals of this module is to build up confidence by asking easy and clear questions.

Questions regarding the existing occupational workforce composition are aimed at collecting information for two purposes:

(a) to describe the occupational structure for use in analytical research;

(b) to draw the respondent's attention to specific groups of workers to help in answering questions in the following sections.

Information on the mean education level of the workforce (by occupation) should be obtained as it can be used as a means of identifying employers with high-level skills requirements. Potentially, employers with highly qualified workforces will have quite different experiences in terms of finding suitably skilled staff, and quite different responses regarding skills development. It may also be interesting to obtain information on the proportion of women and changes in the workforce.

In this first module, the decision on occupational classification to be used is reflected in the categories for which information is wanted.

2.4.4. Module 2: recruitment

Questions in this section are designed to identify establishment hiring experience over a specific period. The goal is to investigate whether there are problems finding the right person to hire, with special emphasis on problems associated with skill deficiencies in new recruits.
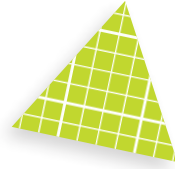
There is an initial focus on vacancies. These questions identify the number of vacancies and also ask about hard-to-fill vacancies for the respondents, specifically because of a lack of skills in the labour market. After examining their incidence, volume and profile, it is necessary to explore the specific skills that employers find lacking and the impact of skill-shortage vacancies.

This module can be expanded to include questions on recruitment and the skills levels of those leaving education. These questions are usually organised through an initial question asking whether the enterprise has recruited anybody into their first job on leaving education in the past two to three years. It is then possible to explore employers' perceptions of these recruits in terms of their readiness for work and their skills.

2.4.5. Module 3: skills used by the current workforce

This module should introduce questions designed to measure the skills held by the existing workforce. In addition to measuring current levels of skills, questions should target the problem of skills gaps, exploring their incidence, size, profile and causes, before reviewing the specific skills that employers report to be lacking among their staff. Questions to capture the impact of skills gaps and the actions employers take to overcome these gaps are also relevant. This section also usually includes questions on medium-term skills requirements.

2.4.6. Module 4: workforce development

This module is designed to examine the quantity and quality of training and development activities undertaken by employers. The main goal is to help the understanding of staff training practices in establishments, but policy-related questions could also be included.

2.4.7. Module 5: demand for workforce

This module can be designed to obtain information on future plans in terms of expanding/reducing the workforce of the establishment. The main difficulty is to generate reliable data, as factual as possible, not just desirable intentions or 'socially accepted' responses. Recommendations to achieve such a goal include:

(a) the time span in which to frame the estimate should not be very long, up to a maximum of six months but preferably three months;

(b) the questions should be answered against a fairly detailed range of quantities, not just a simple expanding/contracting possibility;

(c) anchor the answer to specific groups of occupations, rather than relating it to the whole workforce;

(d) include questions on the reasons why the establishment expects to be expanding/contracting its workforce in the future;

(e) use information obtained in previous modules of the survey (especially the recruitment module) to check the validity of the forecasts and introduce questions if the answer is different from past trends.

Regardless of how well designed this module is, the information obtained has to be considered, at best, as indicative of future trends; very precise calculations of numbers of new hirings should be avoided.

2.4.8. Module 6: business strategy and structure

The goal of this section is to obtain information to contextualise present and future skills needs. The main idea is that some enterprises will be 'skill-intensive', while others will base their strategies in a workforce using few or lower levels of skills. Information gathered in this section should help to sort establishments by skills intensity.
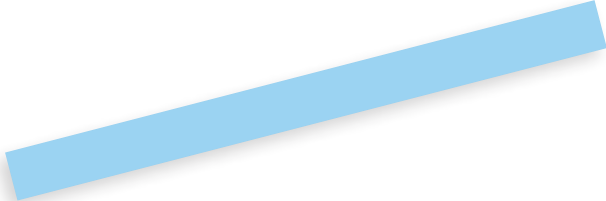
Private sector businesses employ various business strategies to drive performance. Three elements are key to these strategies: type of products or services; work organisation; and process technology. Market-competitive pressures have also been stressed as an important factor in shaping decisions, and this can produce a very long list of items. To keep the survey manageable, these are commonly introduced in a very general and simple way, resulting in questions that can be answered quickly, but that provide a sense of the extent to which the information will be useful in discriminating between different types of establishment.

There are three possible approaches to the problem of balancing survey length and information in this area:

(a) add only a few questions on each element considered important and create an index to characterise the establishment;

(b) focus on a specific area and add all or almost all of the questions related to this area. This defines the types of enterprises along one dimension. For instance, some ESSs investigate product market strategies using questions on a series of product and service characteristics including price dependency, innovation, quality and customisation;

(c) add questions related to the different dimensions to other sections. The idea is to relate skills use (skills gaps), vacancies (skills shortages) and training directly to the introduction of new products, technologies, and the use of different forms of work organisation.

Figure 7.   Section 2.4 key concepts

Defining the structure of a questionnaire on skills	Establish which modules will be included in the survey	Insert in each module questions reflecting the specific objectives of the survey	Generate a questionnaire
	Seriously consider trade-off between quantity and quality of information	Use already developed questionnaires as a starting point to develop a new one	

2.5. Sampling in an ESS

2.5.1. The research population

2.5.1.1. Definition of, and problems in identifying, the research population

The research population consists of all the subjects from whom information is wanted. There are currently two problems in establishing the population of interest:

(a) finding a suitable definition of the subjects belonging to the population;

(b) finding a data source that comprehensively collects all the subjects from the population and from which the sample frame will be selected.

2.5.1.2. Identifying establishments

The subjects of the population in an ESS are enterprises, but using establishments is accepted, and has even become the norm (see Box 6). Initially, the definition of an establishment is simply related to undertaking economic activity. However, there are circumstances that introduce some complexities and make assigning economic activities to the category of establishment (and enterprise, for that matter) more difficult. Two specific situations that create conceptual problems can often be observed, most notably in developing countries.

#### 2.5.1.3. Identifying family businesses

In this case the distinction is not so much that the owners and all the workers are members of the same family, but that production has the goal of complementing their sources of income, and sometimes completely sustaining them. The establishment/enterprise may be completely legal (in some countries these entities must be registered to enjoy access to some resources), and it can even be difficult to separate them from other regular enterprises – a situation which is quite common in agricultural and related sectors. However, it is recommended that these businesses should not be included in the population of interest because the conditions of operation and production, and therefore skill needs, are completely different from standard commercial entities, and the survey itself may not be appropriately designed for this type of set up.

Box 6. Why establishments?

An enterprise is an actual registered company, government business enterprise, association, partnership or trust, whereas an establishment is a single physical location where business is conducted or where services or industrial operations are performed (factory, mill, store, hotel, movie theatre, mine, farm, administrative office). There is a broad consensus that the best unit of analysis in an ESS is the establishment. The main reason is that a good deal of information is required on the specific skills that workers possess (or should possess). Also, some questions in ESSs try to obtain information on the way employees perform their tasks. The knowledge necessary to answer an ESS correctly is only available where there is close contact between the informant (the employer) and the object of interest (employees). If enterprises were taken as the unit of analysis, it could be that someone details the skills of an employees that they have never seen, possibly even from an establishment that they have never visited.

There are potentially two major problems.

- Establishments may be specialised in an area of the enterprise (for instance production) which would provide a poor overview of the broad occupational diversity of the firm. This could lead to aggregation problems.

- We often do not know *a priori* the distribution of workers within establishments, which greatly complicates the sampling design process. However, in many cases the national statistical office will have earlier survey data on numbers employed in each establishment. Other possible solutions include a short telephone survey to check contact details and employee numbers, or a preliminary questionnaire sent to establishments to identify the occupational composition of the workforce and then start the sampling process (for instance, sampling by establishment according to the number of workers in each occupation type).
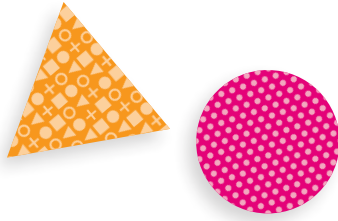
2.5.1.4. Identifying the informal economy

One of the main problems of an ESS (and in general of any enterprise-centred survey) is how to deal with establishments working in the 'shadow/informal' economy. The reason is twofold.

(a) By definition, such establishments are often 'invisible' in terms of administrative control (not registered, not paying taxes). It is almost impossible to account for their numbers or where they are located, imposing serious difficulties at the stage of designing and applying statistical techniques to analyse them (basically sampling techniques).

(b) Establishments operating in the informal economy may be quite different from those operating in the regular market. Strategies, structures, product market orientation, typology of employees are not the same, which introduces complexity in trying to fit questions appropriate for both types of establishment in a common survey. The design of relevant policies may also call for some sort of differentiation.

Despite these difficulties, it is usually argued that the informal economy may, occasionally, be so pervasive that not taking it into account would not produce a real picture of the sector (economy). The first action to take is to have a clear understanding of how important the informal economy is, so that it is possible to balance the efforts put into including it in the survey with the associated benefits. For instance, if the focus of the survey is the needs of fast-growing, exporting or innovative establishments (sectors), because they are expected to be driving future employment growth, efforts to include the informal economy may not pay off.

Actions recommended to tackle the issue of informal economy would be to consider the relevance of including establishments from this sector: the decision on whether to allocate resources for surveying these types of establishment will depend on the share of employment generated by these companies, and the focus of the policies and programmes the ESS will contribute to.

If the decision is taken to include them, there are several lines of approach: review the information easily available, including from national reports and sector-specific value chain analysis; initiate conversations with key informants such as NGOs and business development services; and hold focus group discussions with owners of informal businesses. The aim is to gain at least a clear understanding of the national definition of informal businesses, the sector-specific links between formal and informal businesses, and the on-the-job training practices in the informal economy [6].

Inclusion of the informal economy may be approached from two technical perspectives:

(a) impose the assumption that informal establishments are very much like regular micro establishments and make an effort to interview this type of establishment [7];

(b) simplify the questionnaire, train interviewers thoroughly with mock interview techniques, and run the survey without the statistical restrictions imposed on the regular enterprises, for example using a snowball sampling approach (Atkinson and Flint, 2004), or a Delphi method (Hsu and Sandford, 2007); or simply use the questionnaire as guidance for focus group discussions. Derive conclusions and recommendations with the understanding that they are indicative and cannot be generalised.

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[6] For additional guidance see ILO guides on Participatory Value Chain Analysis (www.ilo.org/wcmsp5/groups/public/---ed_emp/documents/publication/wcms_165367.pdf) and on Informal Apprenticeships (http://ilo.org/skills/projects/WCMS_158771/lang--en/index.htm).

[7] This is the strategy followed in the STEP survey.

An additional aspect that will define the population of interest is the size of the establishment. The main issue is where to locate the lower cut-off point, which translates into whether to include microenterprises (usually defined as having from one to five employees). Including them in the target population of interest raises three main problems.

(a) It may be expensive to include them: updated records of micro-establishments are rare, which creates problems at the moment of sampling; locating them is usually problematic and they are more expensive to interview; response rates are much lower than in bigger establishments, which increases the cost of field work (issues of replacement, more resources expended on talking them into participation).

(b) Many micro-establishments operate in the informal economy or are family run.

(c) The 'regular' ESS questionnaire is better adapted to the realities of bigger establishments.

However, it is argued that not including them would generate less reliable data at the aggregate level as, in some sectors, small establishments account for a large proportion of the overall population.

Table 4.   How establishment size is considered in questionnaire design

Survey	Establishment size target
Employer skills needs survey Cambodia, ILO Asia	From 10 to more than 100 employees (stratification at 10-19, 20-99, 100+)
Guidelines to detect skills needs of enterprises, ILO Central and Eastern Europe	From one to more than 250 employees (stratification at 1-9, 10-25, 25-250, 250+)
Staffordshire Moorlands employer skills needs survey, LSP, UK	From two to more than 50 employees (stratification at 2-10, 11-24, 25-49, 50+)
Employer skills survey, UKCES, UK	From one to more than 250 employees (stratification at 1, 2-4, 5-9, 10-24, 25-49, 50-249, 250+)
STEP skills measurement surveys, World Bank	From one to more than 250 employees
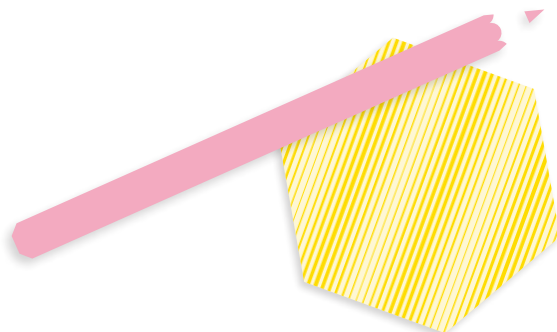
Many ESSs include micro-establishments in their target population. One possibility is to define two distinct research populations: the two groups can be treated with different techniques and the data obtained can have different characteristics. The following should be considered.

Recommendations
- Definition of objectives should drive the decision on whether to include micro-establishments. For instance, if an objective is to foster the export capacity of firms, small establishments can be excluded.
- Consider the use of the ESS for bigger establishments and more qualitative approaches for micro sizes.
- Budget constraints should be considered.
- The decision has to align with the strategy on the informal economy.
- If micro-establishments are included, the questionnaire has to be adapted.

2.5.1.6. Identifying sectors

A final decision to define the population of interest is in which sectors we want to focus our interest. The objectives for the ESS will drive the decision but the sectoral approach has some advantages as it allows considering more carefully the analysis of sector-specific skills (even establishment-specific). As these skills will most likely have a large proportion of technical skills, the problem of how to analyse this type of skills is less acute. If the whole economy is to be analysed, some sort of customisation of the questionnaire by sector should be considered, at least for skill-related questions.

2.5.2. Determining the sample frame and sampling methodology

2.5.2.1. Limitations to applying probabilistic sampling

The sample is the group of selected establishments from the population that are going to be interviewed. The sample frame is the list of establishments with their contact information (address and/or phone number). All establishments that form the research population are selectable for the sample.
A comprehensive, reliable and updated list of all establishments with contact information eases the sampling process, while the lack of any establishment census makes it difficult to use a probabilistic sampling technique which is required in order to guarantee that ESS conclusions can be applied to the whole research population ([8]).

Even if a census is available, it is important to check quality because it may affect the sample frame. It is crucial to know any limits a sample frame may have. The most usual problems may be:

(a) under-coverage: some establishments are not in the list (sample frame incomplete);

(b) over-coverage: the sample frame includes establishments that are not part of the target population;

(c) duplicates: some elements appear more than once;

(d) lack of accessibility: the sample frame is not sufficiently detailed or up-to-date to locate all the establishments selected in the sampling process;

(e) errors: some, but not all, of the information in the frame is incorrect, which prevents correctly stratifying the sample.

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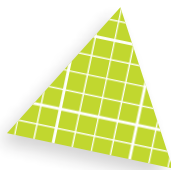
[8] While it is better to have an establishment census, often only an enterprise census is available. This imposes relatively minor statistical problems but makes it necessary to include in the questionnaire information on the potential multi-establishment structure of the enterprise.
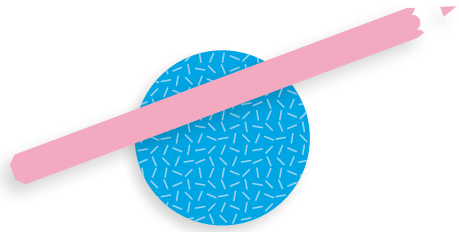
The extent to which each type of imperfection is present must be determined. If the imperfection affects only a small proportion of the data, it is not a major problem. If the census cannot be fully relied on, it is important to know its defects and to quantify them based on extrapolation of sector growth trends or key informant advice. For instance, if the last sample update was five years ago, the percentage of new establishments can be estimated using information on the historical trends of business creation in the sector in question. Over-coverage, duplicates and lack of accessibility can reduce the number of establishments interviewed: it is important to compensate for this reduction. Establishments can be replaced during fieldwork (the replacement protocol should be defined during the sampling process and must be compatible with the logistics of the survey). Alternatively, the sample size could have been increased earlier based on the results of the pilot survey, which would have indicated an estimated proportion of excludable cases.

Three steps are recommended.

(a) Contact any official institution that may have an establishment census (statistical offices, treasury offices, ministries of trade and industry, other line ministries) and private institutions (guilds, professional associations).

(b) Consolidate the best possible list by adding the information from various lists, avoiding duplicates and establishments that are out of the research population. In case of doubt about the validity of different contact information for the same establishment, keep everything in case one part is not correct.

(c) Evaluate the quality of the final list: is it complete and up-to-date? Is the contact information correct? Is the information available sufficient for a stratified sampling technique? Is there information on the informal economy?

If there are serious doubts about the quality of the sample frame it is important to quantify and categorise as accurately as possible the share of establishments that are in the research population but not on the list.

For instance, in the considered sector and region there may be no information on small establishments, which can represent 20% of the total. It is necessary to try to get to know as far as possible where the potential biases in the results come from. This way, the results obtained can still be used, but with necessary caution.

2.5.2.2. No sample frame

Sometimes the problems detected in the sample frame are too severe or simply there is no sample frame. There are several methods for collecting data without a sample frame, although this is not adequate for doing statistical inference as it is not possible to know what the data represents. Nevertheless, they can serve other purposes and can offer qualitative information. The main possibilities to be considered are listed below.

(a) Constructing a sample frame: this option involves creating a list of all the establishments included in the research population by, for instance, going to all cities and villages to locate every single establishment. This can be very expensive and may not be feasible but it can be considered as the first step towards an ESS in the future.

(b) Redefining the research population: the incompleteness of the sampling frame may be due to the lack of information about small establishments or those in the informal economy; these can be excluded from the research population. The ESS results will, therefore, not apply to small or informal establishments, and this will affect the national relevance of the survey. An alternative is to split the research population in two, the second group being formed by the non-listed establishments, and treat them differently (for instance by using a non-random technique for the companies in the informal economy).

(c) A different census can be sourced: to locate micro-businesses, a household census may be of use if it includes questions to detect whether respondents work in micro-businesses. The size of the sample will be increased as a function of the

micro-business identified. If the household census estimates that 50% of households are involved in micro-businesses, the corresponding households should be added to the sample frame. Such household survey questions, however, may include a bias, as household micro-businesses tend to go unreported for tax evasion purposes.

2.5.2.3. Constraints on the sampling technique

Once the sample frame has been created, there follows the process of selecting the specific establishments to be interviewed (the sample). Establishments must be selected randomly, using an adequate probabilistic sampling technique, as capturing a representative sample of them is essential to ensure that the results obtained are reliable. There are several possibilities (see Box 7) but selection of the sampling technique must take into account the following constraints:

(a) budget constraints;

(b) the timeline available for the ESS to contribute meaningfully to policy processes and programme design: the shorter the deadlines, the smaller the sample should be;

(c) desired accuracy: more accurate results can imply a bigger sample which can increase the cost of the survey;

(d) desired level of disaggregation of the results (for instance, results stratified by region, sector, size of firms, kind of skill, level of education of workers): more disaggregated results can imply a bigger sample, which can increase the cost of the survey;

(e) the quality of the available sampling frame;

(f) the circumstances of data collection: are all places accessible at a reasonable cost in the same period of time and are there sufficient well-trained interviewers?

Selection of the method is highly conditional on the characteristics of the sampling frame and the budget constraints.

Box 7.   Probabilistic sampling methods

Simple random sampling: each item in the population is equally likely to be selected. The technique can be used in more complex methods.

Systematic random sampling: identify the population size N and the sample size n; $K = N/n$; randomly select a starting point within the K interval; then select every Kth item thereafter. Be careful as the order can be related to a characteristic of the population (for instance, the establishments of an enterprise can be together).

Stratified sampling: samples are selected independently within strata. Strata are non-overlapping subgroups of the survey population; for instance, sector can be used to stratify. Simple random sampling can be used within strata. This method requires a census in which individuals are correctly classified according to strata and sampling weights (see below). Quota sampling is like stratified sampling but without random selection within strata; it should not be used to do statistical inference.

Cluster sampling: clusters, which are groups of heterogeneous establishments, are selected. A population is split into non-overlapping parts; each part is a primary sampling unit (PSU). All the elements of the selected PSU enter the final sample. PSUs can be sampled by simple random sampling. This technique is often used when other methods are unfeasible, impractical or expensive. It may be chosen because there is no sampling frame. For instance, geographic areas (e.g. villages) can be defined as basic units to be randomly sampled. All the establishments in the selected area will be taken for analysis.

Multistage sampling: within the randomly selected initial sampling units or first-stage sample (PSU), subsamples are randomly selected to create a second-stage sample. By repeating this operation, you can select a higher-stage sample.

2.5.2.4. Defining sampling weights

Sampling weights or survey weights are positive values associated with each unit in the sample. Weights are included to obtain measures from the sample that can represent the whole population or a part of the population, such as aggregation of skills needs or occupations by groups of establishments. The results of the survey could also be weighed to put emphasis on the employment structure. As the weighting process concerns the survey as a whole it has to be done by the central coordination unit of the survey.

Disproportional sampling can be used to ensure that the survey will include establishments with uncommon characteristics, that otherwise would not be represented well in the sample, or to obtain additional information on representative sectors or areas. Sampling weights are the reciprocals of the selection probabilities for the sampling units.

2.5.2.5. Sample size

The sample size depends on several factors:

(a) the sampling method;

(b) the desired accuracy of the results (for a given sampling technique the higher the accuracy, the larger the sample);

(c) the level of disaggregation of the results (general results versus results stratified by occupation, skills). It is important to guarantee a minimum number of observations per subgroup;

(d) the budget;

(e) the rate of expected non-response.
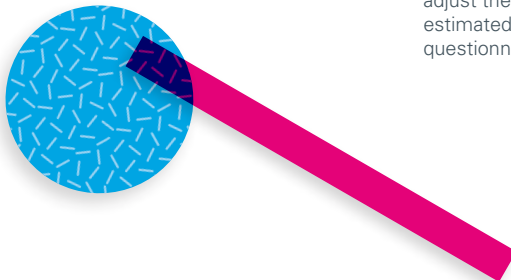
2.5.2.6. How to proceed

There are several important decisions to be made to ensure that the process of sampling is done correctly.

(a) Contract an external professional to establish the sampling selection (a good choice could be the country's statistical office or other offices that have already performed a survey on a similar research population). The sampling process of an ESS is a complex task that must be done by qualified staff with a wide knowledge of the country's characteristics and sampling techniques that can affect data collection.

(b) Provide the external professional with the required information on the sample frame, the budget, the required level of disaggregation and accuracy, the resources for data collection (budget and characteristics of the team in charge of the data collection and their resources).

(c) Ask him/her also to describe the sampling selection scheme. This scheme must establish the final selection of the sample as close as possible to the data collection period.

(d) The sampling scheme will include selection of the pilot sample and of the final sample. A pilot is a preview trial of fieldwork with a reduced sample to test the questionnaire and the whole fieldwork process.

(e) Ensure the sample is selected randomly, using an adequate probabilistic sampling technique: non-probabilistic methods do not provide good data for statistical inference (i.e. to ensure that ESS results are valid not only for the sample but also for the whole population).

(f) Ensure the information obtained during the pilot study is taken into account. For instance, include the non-response rate estimated during the pilot to adjust the final sample size (the initial sample size is estimated assuming that everybody answers the questionnaire).

Figure 8. **Section 2.5 key concepts**

Sampling in an ESS	Define the research population	Check for the existence of a sample frame	Choose the sampling method and get the sample	Well-defined set of establishments to study (the sample) and sampling methodology

| | Define which establishments are eligible:
• Family business
• Informal economy
• Size
• Sector | Get a usable sample frame
Hurdles:
• There is no census
• The census is not up-to-date
• The census is not complete | Collaborate with experts, national statistical agencies
Consider constraints on the selection of the process | Be familiar with its defects, if any |

2.6. Data collection

Data collection is a crucial part of the process and can determine whether a survey succeeds or fails. The objective of this phase is to obtain the maximum number of well-answered, complete questionnaires from the sample. The answers must not depend on the specific conditions of data collection (such as the interviewers) to provide reliable results. Data collection must be carefully piloted, planned and supervised.

2.6.1. Risks

The main risks of this phase are: going over budget; not having enough complete questionnaire (a high non-response rate and too many missing answers within questionnaires); a lack of answer homogeneity because of fieldwork-related issues, most likely related to the capacity of the interviewers.

2.6.2. Training interviewers

Interviewer training is essential, and the pilot is also an opportunity to test their capacities and coach them with end-of-the-day debriefing sessions, to improve future data homogeneity. Trained interviewers are also likely to maximise the number of answered questions. An instruction manual for interviewers is highly recommended. It should include instructions on how to present the survey and fill in the questionnaire; it may also contain hints on questions that are potentially ambiguous or may need clarification.
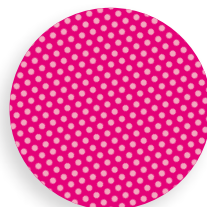
2.6.3. Logistics

Logistics must be carefully monitored to keep within budget. There should be a plan for collecting data, specifying to whom/when/where/how the survey must be administered, the logistics for all the material needed, and what should be done with the completed questionnaires (depending on the methodology used). This plan should also specify what should be done if something goes wrong.

Some important issues to be considered are:

(a) how to control for interviews conducted within the time frame planned;

(b) how to control for non-response rate (and activate recall system);

(c) how to control data entry during fieldwork (and the corresponding system of data quality control).

2.6.4. Data collection in an ESS

ESS interviews must be done at the physical location of the establishment, with a person for whom the time devoted to the survey could be spent otherwise. Although the respondent is not required to know too much 'hard' data (for instance previous year revenues) to answer the regular questions in this type of survey, it may be difficult to complete the survey as some questions are historical and involve recalling information or require making non-trivial judgements on complex issues such as skills. In addition, employers are usually reluctant to provide information for fear of disclosing sensitive data; they may also lack the motivation to collaborate with institutions as they do not get to see the benefits. No less importantly, employers may already be under pressure to provide administrative or qualitative data for tax or statistical surveys. To help data collection:

(a) engage local or national employers' associations in the process to achieve two goals:
  • generate a sense of trust;
  • generate a sense of interest;

(b) promotional campaigns or direct contact with employers letting them know the purpose and objectives of the ESS may be a good way to create a positive climate for the survey;

(c) plan a flexible system of visits to the establishment, adapting to the agenda of the employer. Carefully plan call-backs and reminders;

(d) train interviewers so they can communicate appropriately with employers, generating trust and interest;

(e) develop a presentation of the survey in which the benefits of participation are explicitly and clearly stated. Mechanisms to share the results of the survey with employers could be developed.

2.6.5. Piloting the questionnaire

Before rolling out the survey it is necessary to pre-test or pilot the questionnaire, the purpose being to guarantee that respondents understand the questions correctly and can provide accurate answers. This can also provide information about potential sources of response error or differences in response among different typologies of establishment, as well as checking how long it takes to complete the questionnaire. Each question must be checked for comprehension, retrieval, judgement and response.

Usually, the process of piloting the survey is split into two actions: an internal informal check and a field pilot.

2.6.5.1. Internal informal checking

For this check, semi-structured interviews are conducted with a small number of respondents similar to those targeted in the survey and, sometimes also with experts.

2.6.5.2. Field pilot

The field pilot has to be conceptualised just as if it were the actual implementation of the survey itself. The idea is to reproduce at a smaller scale what will happen once the survey is launched.

The following steps are recommended.

(a) Select the sample for the pilot and carefully plan the pilot data collection exercise. The plan must be as detailed as possible as it is a first version of the plan for data collection.

(b) Train interviewers through participation, for instance through mock interviews. The number of interviewers trained should exceed those who will be doing the actual fieldwork to prepare for some interviewers opting out.

(c) Run the pilot: to test the questionnaire in a real situation, including lessons learned in a revised version; to test the logistics – the contact with respondents, recalls needed, unit time required for each questionnaire, materials needed, coordination of the supervisor with interviewers, collection of completed questionnaires – and include lessons learned in a revised version of the ESS planning; to detect and study budget deviations and include changes in the real budget; and to calculate pilot non-response rate.

(d) Retrain interviewers after the pilot by addressing with concrete solutions all the issues that arise during the pilot, including questions from the respondents and unclear answers. The proposed solutions should be included in the reshaping of the questionnaire, and in the interviewers' manual.

2.6.6. Data handling

2.6.6.1. Computer-assisted interviews

Data should be entered as close as possible to the respondent, ideally in the same place and immediately after the interview, to allow a check for errors and asking for clarification. Software such as computer-assisted personal interviewing (CAPI) is useful for face-to-face interviews and can also help to reduce costs and time because the data are entered directly into the system. Computer-assisted telephone interviewing (CATI) and computer-assisted web interviewing (CAWI) reduce data entry errors but it is important to ensure secure transmission of data to guarantee confidentiality. Data can be entered manually or questionnaires scanned. In the case of manual data entry, it can be useful to have specific software to aid the process and check for errors.

However the data is entered, the dataset must be centralised; a decentralised process adds technical complexity. Errors can occur while transferring data due to communication failures. The database should be checked not only at the time of data entry but also centrally to guarantee that the process is correct. The data will also be checked for inconsistencies (are the answers possible or logical according to the questionnaire structure?), if specific software was not used for data entry (are the codes possible?), for missing values, and, at least, for outliers (are there too many?). If errors are detected during the central checks, the local unit must be informed.

2.6.6.2. Strategies to unify the coding of open-ended questions

The answers to open-ended questions can be difficult to enter as they can be extensive and practically impossible to code, due to both difficulties in interpreting the answer and the loss of much information. Ideally, the interviewer should take note of the full answer (using a recorder, for example). Sometimes, the respondent does not have enough information to answer a closed question and it is the interviewer who has to interpret the answer to an open-ended one. For instance, if the survey includes establishments operating in the informal economy, the interviewer might ask an open question about the firm's activity in order to classify it within a specific sector.

It could happen that an open-ended question would help the researcher to clarify ambiguous answers or to clarify the coding of an answer. It is important that different interviewers code in the same way. When decisions are difficult, a useful, but costly, strategy is to send two interviewers. Another possibility is to discuss difficult cases with other interviewers.
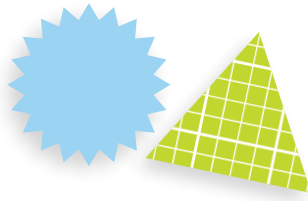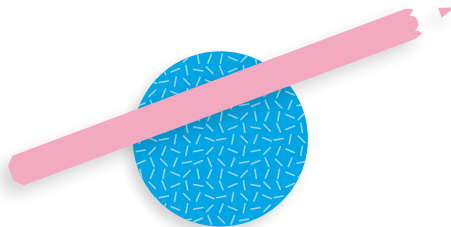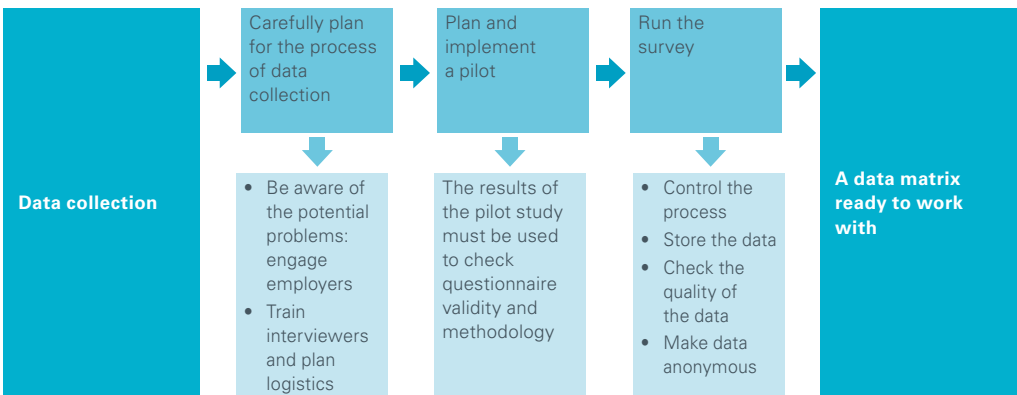
2.6.6.3. Summary of actions for data storing

To ensure successful data storing it is important to take into account the following recommendations.

(a) The dataset must be centralised. A decentralised process of entering data adds technical complexity. Errors can occur while transferring data due to communication failures.

(b) The database should be checked not only at the time of data entry but also centrally, to guarantee that the whole process is correct. Central checks verify that data are correctly stored in the right place.

(c) The data will also be checked for inconsistencies (e.g. are the answers possible or logical according to the questionnaire structure?), and for missing values and for outliers (are there too many?). If errors are detected during the central checks, the local unit must be informed and clarification requested.

(d) Once the data has been entered, stored, checked and corrected it must be made anonymous; only then it is ready for analysis.

Figure 9.   Section 2.6 key concepts

Data collection	Carefully plan for the process of data collection	Plan and implement a pilot	Run the survey	A data matrix ready to work with
	• Be aware of the potential problems: engage employers • Train interviewers and plan logistics	The results of the pilot study must be used to check questionnaire validity and methodology	• Control the process • Store the data • Check the quality of the data • Make data anonymous	

Chapter 3.
Using the data in an establishment skills survey: analysis and policy determination

In this chapter we present the basic concepts of how to analyse the data in an ESS and how to approach policy determination once conclusions are obtained from the analysis.

We start by discussing data analysis. A first simple, though very important, step is to clean and organise the data (data preparation) with the main goal of detecting potential problems. We then turn our attention to how to describe the data using descriptive statistics, and finish with the more complex approach of investigating questions and hypothesis using inference statistics.

In this chapter we also discuss the process of policy development. This step includes producing internal reports to evaluate the quality of the survey and external products (documents and events), disseminate results and contribute to policies and programmes. Every ESS will be used in a different context and with different goals so we concentrate on providing a general framework in which to conceptualise the main output aims for policy discussion and design.

3.1.   Analysis of the data

Once all the data have been entered, checked, corrected and made anonymous, they are ready for analysis. There are two phases.

(a) Internal quality analysis: the goal is to detect the non-response rate (number of overall non-valid questionnaires) and the presence of missing data (individual questions without answers or invalid responses). A high non-response level would call for reconsideration of the quality of the sample and the use of weighting techniques; the problem of missing data can be improved with imputation techniques. Both problems are complex and the solutions call for a high level of technical expertise. Drawbacks or modifications of the data have to be mentioned and discussed when the results are reported.

(b) Conceptual analysis: the goal is to establish distributions, categories and correlations of the variables obtained from the survey:
- distributions: description of the data with univariate statistics;
- categories: preliminary relationships among variables with pairwise statistics (two variables) and graphics. Collapse more than two variables into indicators;
- correlations: dependencies and relationships among variables using multivariable statistics techniques.

Note that this second phase (conceptual analysis) will use two different approaches.

(a) Descriptive statistics: used to describe the basic features of the data. These provide simple summaries about the sample and help in understanding what the data shows.

(b) Inferential statistics: investigate questions, models and hypotheses. Inferential refers to the concept of extending conclusions from the data to more general conditions. It is, however, important to be cautious about being too assertive when a relationship is underscored, as to establish causality demands strong assumptions based on data quality. It is better to use the concept of correlation.

It is important to design in advance the type of analysis to be carried out, for instance with specific outcome tables. This should be guided by the expected relationships derived from previous research in the country/sector or by information provided by key informants in the absence of previous research. Conclusions from analysis of the data can be reached by using specific tables and indicators to justify them.

This part of an ESS is highly complex and should be carried out by experts. If external experts are contracted to do it, internal control is needed to ensure that the specific objectives of the survey are analysed and any country/sector idiosyncrasy considered.
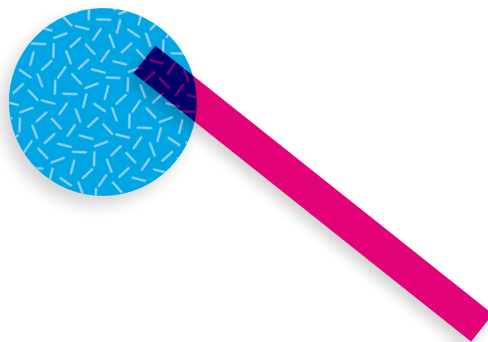
3.1.1. Non-response rate

The overall non-response rate must be computed, as well as the non-response rates for all strata (in stratified sampling) or for all clusters (in stage sampling). As long as the non-response rate is low and equally distributed among strata or clusters, we can be confident that the results have not been biased by non-response. If this is not the case, a weighting adjustment or imputation strategy should be considered. If needed, a strategy to impute missing values should be used and the 'completed' matrix stored separately for analysis. It is essential to specify the non-response rate and the definition of non-response in the survey report.

3.1.2. Missing data

It is useful to perform the same analysis at question level (missing values) to search for possible patterns. The results of this analysis do not necessarily have to appear in the report. Nevertheless, this analysis identifies questions that are not working well overall or within a particular subgroup (stratum/cluster). This information is valuable for replications.

Box 8.   Univariate, bivariate and multivariate measures and results

Univariate measures and results: measures and results of a single variable (the same measure can be computed for several variables and can be presented together in the same graphic or table, but the exclusion of a variable from the analysis does not change the results).

Bivariate measures and results: measures that are computed for pairs of variables together to see possible relationships between them.

Multivariate measures and results: measures that can be computed for several variables together. If the variables included are relevant for the analysis, the exclusion of a variable will change the results.

3.1.3. Indicators

The next step is to analyse the actual data, starting with the descriptive results for the country (such as number of establishments classified by size, geographic area, sector, or employment rate).Then, all defined indicators must be calculated. Appropriate position measures (means for quantitative variables, proportions for attributes, and medians or proportions for ordered variables such as Likert scales) should be calculated. Confidence intervals should be given for the most relevant, if not all, measures. These are the basic univariate results.

3.1.4. Tables and graphics

Defined indicators should be included in a table or graph, with any values (established in advance) to which they are to be compared (for example, specific standards or target goals, past data, means). Estimates of relevant variables must be included.

An interesting option is to group comparable estimates and graph them together with their confidence intervals to compare a variable by strata. This graph can draw together a lot of information and allows for simple visual comparisons without the need for complicated
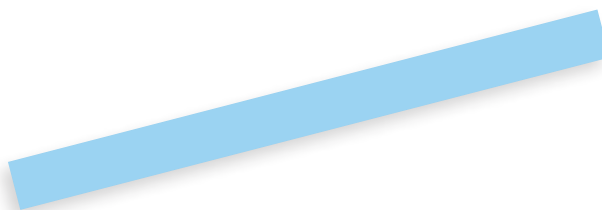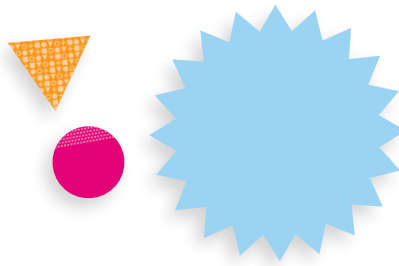
techniques. This graphic presents comparative results that can be interpreted by users with limited knowledge of statistics, when well explained: if intervals are disjoint, it can be concluded that estimates are different between strata. Numerical results can be included in the annex.

3.1.5. Contingency tables and cartograms

Contingency tables present variables grouped by pairs to classify establishments, such as by sector/activity or size, with employee characteristics related to employee skills or recruitment difficulties. Contingency tables can also be used to present results by area. However, cartograms (coloured maps) may be a better option and should be considered. It is important not to overload a report with many similar tables and graphics, as this will only serve to confuse the reader. It is useful to have different formats for different concepts and include only the most important results in the report. All additional information must be included in the annex. The following table includes some possible descriptive tables and graphics.

Table 5.   Descriptive tables

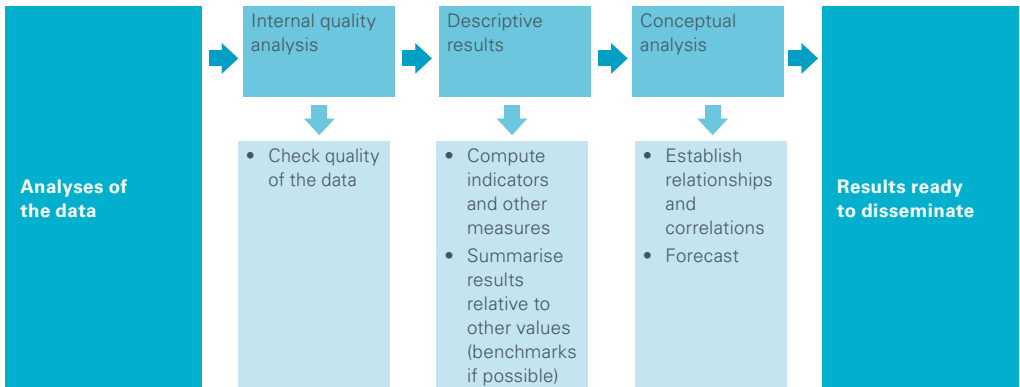|	
Basic information and workforce occupational structure and characteristics	• profiles of the country by establishment: firms can be classified by size, ownership and sector; • distribution of main markets; • distribution of employment by occupational group: specific contingency tables by main sectors and gender; • relationship between market specialisation and occupation structure; • profile of employment growth by occupation, sector and size.
Recruitment	• profiles of recruitment difficulties by establishment: firms can be classified by size, sector and geographic area; • profiles of recruitment difficulties by occupation; • incidence of vacancies by type of establishment and workplace; • skills deficiencies by typology of workers.
Skills used by the current workforce	• incidence of low proficiency by type of occupation; • typology of difficulties in skill proficiency by occupation; • distribution of actions to overcome skills shortages, by sector and size; • incidence of skill shortages by type of establishment and workplace.
Workforce development	• profiles of training by type of establishment: firms can be classified by size, sector and geographic area; • profiles of training by occupation; • profiles of training by staff qualification.
Demand for workforce	• overall estimation of trends in employment dynamics, by sector and establishment size; • distribution of employment growth/reduction by occupation; • distribution of causes of employment growth/reduction by sector and establishment size.
Business strategy and structure	• profiles of establishments by strategic approach to employee management; • distribution of incidence of workplace arrangements; • incidence and consequences of changes in main strategic approach.

3.1.6. Forecasts

It is often taken for granted that an ESS will provide reliable information on how future demand for skills will develop. This can be true but great caution is also required. First, plain extrapolations from simple questions (are you going to hire more workers?) must be avoided. Calculations must be more sophisticated to include more complexity and avoid misleading figures. Second, forecasting should, whenever possible, rely on past information to create trends and model changes. This implies that having regular ESSs is an important goal. If the ESS is a one-shot survey, it is recommended to look for past information from auxiliary data (other enterprise or workers surveys). Third, when the questionnaire includes questions on predictions of future needs, this information must be treated carefully. Such information will not lead to a forecast, but can give some insight into the possible directions of needs.

3.1.7. Recommendations

In order to proceed to the analysis of the data obtained in the field work, it is highly recommended to:

(a) develop a quality control process. Conclude with an evaluation of the data quality and suggestions in case of problems;

(b) define an analysis plan and outcome tables, with a description of the type of analysis employed and possible conclusions based on past research and international evidence;

(c) when the analysis is carried out by external consultants, provide the support for correct contextualisation of the results;

(d) bring the results to a forum including all the key stakeholders. Discuss and reformulate the analysis if necessary. Establish preliminary conclusions.

Figure 10. Section 3.1 key concepts

Analyses of the data	Internal quality analysis	Descriptive results	Conceptual analysis	Results ready to disseminate
	• Check quality of the data	• Compute indicators and other measures • Summarise results relative to other values (benchmarks if possible)	• Establish relationships and correlations • Forecast	
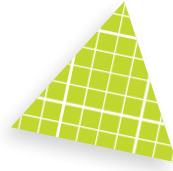
3.2. Evaluating, reporting and disseminating results

In this section we briefly discuss how to report the results of the analysis carried out from the data gathered in the survey. We describe the formal outputs that should be produced using the information provided by an ESS: these include internal reports to evaluate the quality of the survey, as well as external products (documents and events) designed not only to disseminate results but also to contribute to assessing policy instruments and measures. We also provide suggestions on dissemination.

3.2.1. Internal report

3.2.1.1. Coverage summary

The first document to be produced is an internal report aimed at helping to evaluate the efficiency and efficacy of the process of survey planning, design, implementation and data analysis. The report must show the relationship between what was planned and what was actually done. This relationship must be demonstrated in several directions, including at least the following:

(a) general information such as geographic coverage of the survey and response rate;

(b) information about the enterprises surveyed: sectors covered, type of enterprises (e.g. size);

(c) information on employers (skills surveyed, occupations).

The information provided on each subject must include not only the ratio between what was planned and what was done (numerical), but also the reasons for the differences (qualitative information). The reasons may be related to one or more phases of the survey. Proper classification of these reasons will help to prevent similar problems in the future. For instance, response may have been low because a prior information campaign was not planned or because a problem occurred during data collection.

#### 3.2.1.2. Information for future surveys

The internal report will be used to improve future iterations of the survey. This is why it is important to include an extensive report of incidents and problems that occurred, as well as solutions applied. The report should also detail all the strengths of the survey.

A lot of informal learning also occurs during a survey that is useful for future editions. These lessons should also be documented.

3.2.1.3. Efficiency

After evaluating what has been done, the next step is evaluating the cost of these actions. There are two issues to consider. First, review the costs of the survey in relation to the budget (are there any differences?), and second, analyse whether any actions could have been carried out at a lower cost.

(a) The ratios between real and budgeted costs must be calculated at all levels: action by action, phase by phase and overall. These ratios must be calculated once the actions are complete, but they can also be calculated during the action to control the process, for example during data collection, which can be a long process. Another aspect to consider is computation of ratios for planned actions and results. When there is a large difference between what has been done and what should have been done, there will also be a large difference between these two ratios, the second of which will provide information on efficiency.

(b) As long as the original budget was the minimum necessary, and the cost of real actions was evaluated, the above ratio will be sufficient. Nevertheless, the budget should be flexible enough to cater for unexpected contingencies. That is why the ratios described in the previous paragraph could also be calculated with a more restrictive budget.
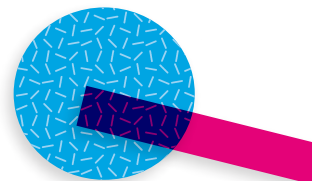
3.2.1.4. Timing

One of the most important factors that can alter a budget is delay. Considerable delays can affect the budget and also the quality of data if the delays occur during the data collection phase. The final evaluation report must specify if the planned schedule was not adhered too and it must also discuss the consequences of any delays.

The internal report can include a summary of the main results to be sent for validation by external experts. The best way to obtain the input from these experts would be in a focus group, the role of which would be to verify and interpret results, fill in data gaps and explain inconclusive findings. The group must come to an agreement about recommendations on policies and how to implement them. The composition of the group may be a mix of:

(a) employer association representatives, potentially with key individual employers;

(b) trade union and/or professional association representatives;

(c) training providers;

(d) government administrators.

Potentially valuable but more difficult to include in this phase are experts with expertise and experience in running similar surveys (in the same country or elsewhere). Such experts could provide a comparative view of the process and results obtained as well as information on strategies that have been successful in other places to identify room for improvement in future iterations. The final version of the internal report should include the conclusions of the external experts. This should end with a discussion of the limitations of the current edition of the survey and recommendations for the future. It should also specify any changes made to the implementation protocol for future iterations of the survey.

### 3.2.2. Reporting results: general elements

3.2.2.1. Reporting versus analysing the data

The process of reporting results consists of preparing documents that will reach the different actors interested in skills use efficiency. Reporting is not just analysis of the data; it also involves presentation of conclusions, recommendations and policies to deal with problems that were known before the survey or that might have been detected during analysis. It is possible to report results 'technically', with extensive tables and graphs for example, and let readers draw their own conclusions. However, data analysis is a complex task that requires a certain level of technical expertise. Providing the users with at least a preliminary evaluation of the data, even if it is a snapshot of potential implications and solutions, will give the survey a greater impact. The survey is not a simple collection of data, but a tool to help change behaviours and policies to achieve a better match between supply and demand of skills.

3.2.2.2. Reporting starts a continuous process

When deciding how to report the results of the survey, the first aspect to consider is that analysing and deriving conclusions from the data should be considered a continuous process. There should be a mechanism to ensure feedback is gathered from the institutions and actors, while using the results of the survey to validate and improve the preliminary analysis. Each end user may have specific interests and capabilities in making use of the data. Therefore, when reporting results, it is important to provide:

(a) the 'raw' information as a dataset to be used independently of the analysis generated;

(b) a series of documents with specific analyses, taking into consideration that each actor might make use of different sections of the survey and might also have different quantitative and qualitative complementary data/knowledge to interpret and expand the results.
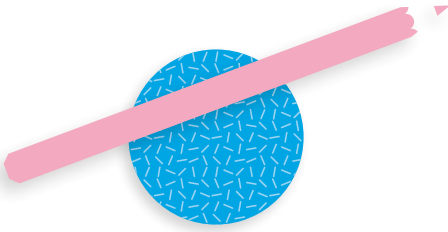
3.2.2.3. Basic data

The first aspect (the basic dataset) is important as some actors (most notably universities and research centres) may engage in continuous analysis of the data in a more sophisticated way than could be done by the survey sponsor. In support of this, it is important to plan not only the creation of the final dataset, but also a set of complementary documents (e.g. a methodological report or a codebook) needed for contextual analysis.

3.2.2.4. Complexity of reports

A second aspect is that the level of complexity of the reports must be adapted to the capabilities of the target end user. Technicalities and sophisticated analysis are necessary, but they should be reported in a language and format that allow users to extract the key information without having to overcome the barriers of technical complexities.

3.2.2.5. Breakdown of information

A third general consideration is that the results and analysis should be reported in as much detail as possible in terms of geographic, industry and occupational disaggregation. This detail will be limited by technical aspects (mainly sample size) and how extensive the survey was, for instance in terms of industries covered. Contextualising results will help end users not only to understand the results but also to transform the knowledge generated into actions and to consider critically actions already suggested in the report.

Reports should be designed for and tailored to different potential end users. They may share a common interest but have diverse needs and capabilities; this should be reflected in the outputs generated from the data gathered. Results with too many generalisations should be avoided.

3.2.2.6. Concept and typologies of reports

A report is written with a clear purpose and for a particular audience. Specific information and evidence are presented, analysed and applied to a particular problem or issue. There are different types of reports.

(a) Evidence report: a standard report that presents data following a specific pattern (industry, occupation, region). The goal is to present the results without proposing any specific hypotheses or purpose. An evidence report does not include recommendations or policies.

(b) Technical report: presents analysis of a specific topic, considering the initial hypotheses and discussing their validity. The techniques used to handle the data are of a medium to high complexity. The approach is factual. There is no discussion of recommendations or policies, but there may be some mention of potential consequences.

(c) Recommendation report: usually focuses on specific problems or issues that are clearly defined from the outset. It is based on an existing technical report or presents the main results of an ad hoc analysis. In both cases, it also discusses related research or experiences and provides a list of recommendations, but these are not designed to offer a definite answer to the problem(s) at hand.

(d) Policy report: similar to a recommendation report but with two important differences. The problem at issue is broader in nature and the document must propose a policy, with a discussion on why this policy is the most appropriate.

(e) Policy briefing: a concise summary of a particular issue, policy options to deal with this issue, and some recommendations on the best option.
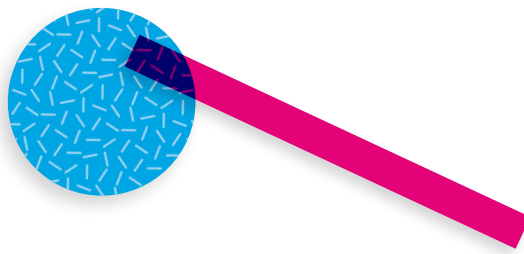
3.2.3.   Designing reports for different users

3.2.3.1. Basic report

A general evidence report, in which all the data gathered are presented in an ordered fashion, must be produced in every case. This report is a presentation of the survey and has to be quite extensive (including all possible tables and indicators) and presented in a user-friendly layout, without technicalities that could make it difficult to read. A brief executive summary could highlight the main issues detected in the data analysis.

3.2.3.2. Specific reports for different end users

A blueprint for the different reports involved could be set out according to the following scheme:

End user – key activities – information needs – type of report

3.2.3.3. Public employment service

The key activities of the public employment service (PES) are:

(a) providing stakeholders and the general public with analyses of the current situation in the labour market and its development;

(b) adapting counselling and guidance services to current and future skills needs;

(c) evaluating and designing active labour market policies and specific programmes;

(d) monitoring the development of training programmes and organising the supply of training;

(e) matching and developing the skills of jobseekers to enterprises' requirements to improve employment prospects.

All these goals require careful analysis of which skills are in most demand and how this will develop in the future. However, the information on skills is generally not as detailed as would be needed, implying that additional data has to be gathered (local branches of the national PES should play an active role in this process). It could be useful to include a section in the survey on how enterprises interact with the PES. Information that would help the PES to forecast future skills needs would be a key element for its effectiveness. Information on, and analysis of, vacancies is the most important part of the survey for the PES.

Potentially useful reports:

(a) technical reports on potential changes in skills demand (requiring anticipation and forecasting techniques);

(b) technical reports on the match between the characteristics of existing unemployed workers and the skills and education levels reported by enterprises as necessary for new recruits. Complementary data on the characteristics of the unemployed are important. A regional approach is generally the most prevalent;

(c) recommendation reports containing critical validation of current labour market policies, most notably related to training, according to their impact on employers' responses.
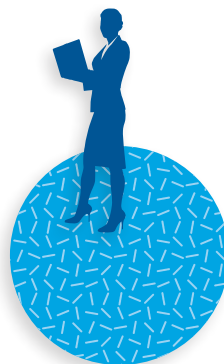
3.2.3.4. Education and training providers: TVET system and others

Public and private education providers operate in the areas of initial vocational education and training (IVET), continuing vocational education and training (CVET), professional and in-company education/training, and higher education. The potential to inform the whole range of actors in education/training depends on the specific design of the questionnaire (as a reflection of the aims of the survey). Activities related to this could be:

(a) adjusting the supply of training to enterprises' needs, reviewing the type of programmes offered to improve programme relevance, and expanding/reducing those which are most/least needed by the labour market. Recommendations should be tailored to different types of training and workers by level of education;

(b) providing advice to employers on how to maximise the return on investment in training, both from a general strategic point of view and through a more detailed tailoring of specific training solutions;

(c) supporting the development and continuous improvement of the TVET system, with emphasis on lifelong learning.

The training section of the survey is the most important but it needs to be contextualised within the broader dimension of the firm.

Potentially useful reports include:

(a) Technical report: a detailed analysis of what, how much, and for whom training is provided. It is necessary to describe the characteristics of enterprises that provide more training.

(b) Recommendation report: a discussion of how enterprises can maximise their investments in training. Particular attention should be paid to enterprises that are clearly undertraining their workforce to try to reveal the reasons for this and offer recommendations to improve the situation.

(c) Recommendation report: performance evaluation of the TVET system, with a particular focus on how employers deal with the problems imposed by the lifelong learning paradigm.

3.2.3.5. Government

This includes national and regional high-level education and employment authorities. Their main responsibilities are:

(a) overseeing, funding and evaluating education and training policies;

(b) overseeing, funding and evaluating employment and adult training policies.

The whole survey contains interesting information for this end user. The most relevant reports are policy reports that include validation of existing education, training and labour market policies.

Outputs that reach the main actors of the labour market – employers, workers and job seekers, as well as prospective workers and employers – are important. Although these will most likely have contact with the institutions mentioned above (public employment service, education and training providers and government), it is important to generate outputs designed to interact directly with individual workers and enterprises. There is potential overlapping of outputs, but the aim is to stress the strategic goal of approaching the monitoring of the labour market from the viewpoint that it is individual workers and enterprises that ultimately decide how successful training and general labour market policies are.
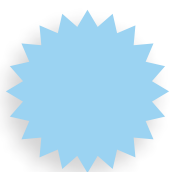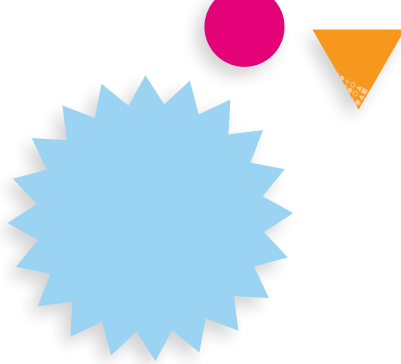
3.2.3.6. Workers

Workers and prospective workers should:

(a) be informed about what skills are in greater demand, both currently and in the future;

(b) have access to mechanisms to evaluate their skills and update them if necessary;

(c) have access to mechanisms for transitioning from lower-demand to higher-demand sectors/ occupations.

Sections on vacancies, skills used in the workplace and the qualifications most in demand, provide key information for workers and prospective workers. It is difficult to reach individuals outside institutions such as PES agencies, but it may be interesting to have documents available in online platforms used by these individuals. Such documents should be interactive and informative rather than analytic, organised in a way that allows users to define their own profile and find out what professional development is available or what training opportunities make most sense for them.

3.2.3.7. Employers

Employers should:

(a) set up efficient recruitment and promotion practices;

(b) implement successful workforce development strategies;

(c) understand the relationship between workforce development practices and more general firm-level strategies.

Information for employers needs to help them determine how the different factors analysed in the survey (vacancies, skills use) are related to the characteristics of enterprises. This is more important than sector-specific information, so users need more analysis than information, which poses the challenge of developing appropriate documents. Enterprises are generally interested in:

(a) their position in relation to their competitors (at industry level, with some weight placed on the size dimension);

(b) evaluating their human resource and training policies: analysis should be organised to reproduce that which is carried out within an enterprise 'skills audit'.

Outputs should mainly be technical reports, although enterprises are more interested in robust, clear conclusions than in the technical details. Technical reports for employers could:

(a) analyse how the different characteristics of the firms relate to the use of skills. It would be interesting, for example, to include some performance indicators;

(b) provide industry analysis, with ranking of enterprises according to their use of skills. This 'average' industry-level characterisation has to be presented against the standards of a skills audit to provide enterprises with a suitable reference point.
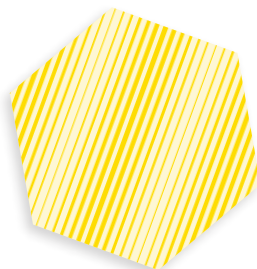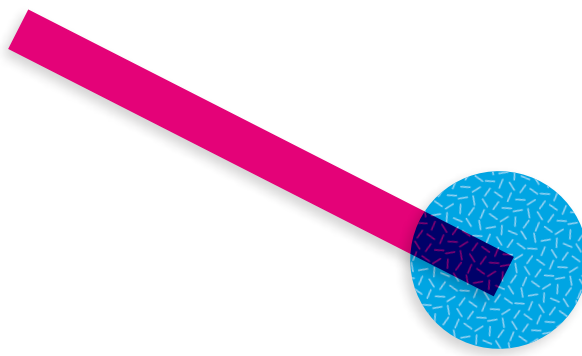
Box 9.   What is a skills audit?

A skills audit is essentially a process for measuring and recording the skills of an individual or group. The main purpose for conducting a skills audit in an organisation is to identify the skills and knowledge that the organisation requires, as well as those it currently has.

Skills audits are also usually carried out to determine training needs, so that an organisation can improve its skills and knowledge. However, skills audits are also completed for other reasons, such as restructuring and deployment. A skills audit gathers more information than simply the current qualifications level. It first identifies the skills matrices for the organisation and then examines the current competencies of each individual against the set of skills required to fulfil a specific role.

There are three key stages to a skills audit. The first is to identify what skills each employee requires. The second is to identify which of the required skills each employee has and whether they meet the standards required. The third is to analyse the results and determine skills development needs. The outcome of the skills audit process is usually training needs analysis, which enables the organisation to target resources and also provides information for purposes such as recruitment and selection, performance management and succession planning.

Source: Watson, 2004.

3.2.4.   Dissemination

3.2.4.1. What is dissemination?

The task of disseminating the results (analysis) of the survey is the final phase of the process. It involves providing access to the data and reports and ensuring that all actors and stakeholders that could potentially make use of them receive them. It is important to distinguish between information and knowledge. The former is the dataset generated, while the latter is encapsulated in all the different reports and documents analysing the data.

The dataset should be freely available to all interested individuals or institutions, with the logical limitations of information privacy and confidentiality.

3.2.4.2. Goals

Documents can be made available through online sites, but it is also important to organise more personal and direct activities, such as conferences or presentations targeting representative groups or key actors. Dissemination activities have three major goals.

(a) To ensure that the information and knowledge generated from the survey reach the target end users. Even though documents are available through different printed and online channels, this does not mean that users are aware of their existence.

(b) To provoke a process of deliberation and create awareness of the importance of this area of skills development. Even if the survey results do not ultimately result in major changes, spurring a debate on how skills and training are considered in the broader policy arena, and specifically in enterprises, is an important step forward.

(c) To collect comments and information that will help either to analyse the data or verify whether the resulting analysis and conclusions are correct. This potential feedback from the users of the data may be invaluable for future editions of the survey or for simply improving the knowledge base of the sponsoring institution.
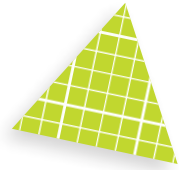
3.2.4.3. Summary of the reporting and dissemination process

The following steps will help ensure the successful elaboration of reports and dissemination of results:

(a) develop an internal report evaluating the process. If parts of the survey have been outsourced to external consultants or agencies, these consultants/agencies must be part of the team carrying out the evaluation. The internal report will also discuss potential improvements for future editions of the survey;

(b) set up a team to produce the reports and define a reporting plan, with specific oversight mechanisms if outsourced;

(c) discuss internally, then externally, the different recommendations and policies derived;

(d) design and implement a dissemination plan.

Figure 11.   Section 3.2 key concepts

Evaluating, reporting and disseminating results	Evaluation of the process	Report results and conclusions	Disseminate reports	ESS generates a process of change in private firms and institution
	• Control and learning	• Design reports tailored to the different end users • Keep the process open to inputs from stakeholders	• Ensure information reaches end users • Activate a process of debate	

ANNEX:
THE QUESTIONNAIRE

How to use this appendix?

This appendix offers an example of a set of questions for a questionnaire. It is organised following the six-section structure in the text main body. From reviews of questionnaires already used in different countries, it selects the questions that, while keeping the length of the survey short, generate the key information to be obtained in an ESS. It can be expanded, depending on the particular interests and information needs of the commissioning institution and its stakeholders, and also depending on the specific circumstances of the survey (for instance budget or field work methodology). To assist in this, alternatives or expansions are given for some of the sections.

These questions are not intended as a blueprint and need customisation. This could relate to country-specific characteristics, specific survey objectives or circumstances; it could also relate to the inclusion of the informal sector, to whether there is a sectoral approach or if the survey is directed to the whole economy. This set of questions should be considered as a mere starting point that helps to form the basis of a questionnaire, rather than the questionnaire as eventually implemented.
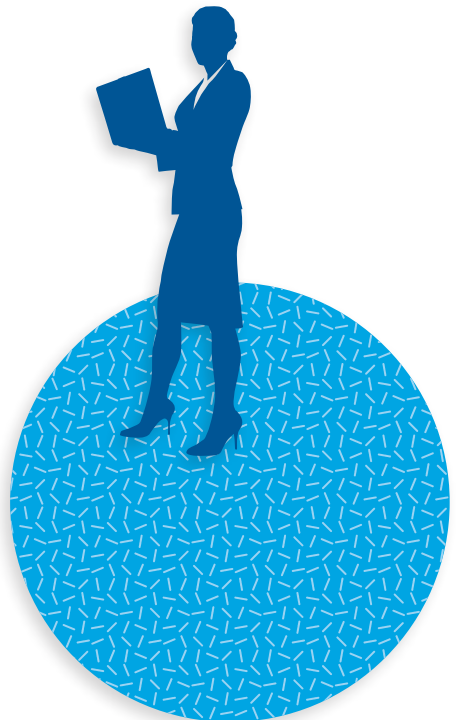
ESTABLISHMENT SKILLS SURVEY: SAMPLE QUESTIONNAIRE

SECTION 0	
0.1. Enterprise name	(as stated in the registration certificate)
0.2. Seat	Street address, number, postal code
0.3. Code of municipality	
0.4. Contact person 0.5. Contact person's phone no. 0.6. E-mail	_____ (name and surname) _____ (office) _____ _____
0.7. Position of the interviewee(s) [CHECK ALL THAT APPLIES]	1) Director/manager/owner 2) Representative of Human Resources Dept. 3) Representative of Administration Dept. 4) Other
0.8. Interviewer 0.9. Interviewer's phone no.	_____ (name and surname) _____
0.10. Date of the interview	__/__/____

Introduce the interviewer and make a brief comment on who is developing the survey and its goals, as well as reassuring the respondent about the confidentiality of the information provided.
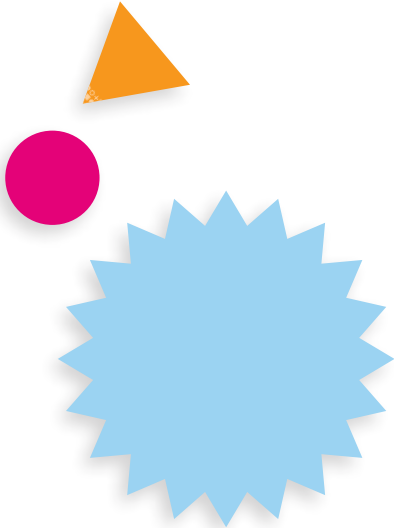
SECTION 1. Basic information on workforce occupational structure and characteristics

1.1.   Size of the enterprise (establishment) [9] *(Select only one answer):*

1	Large (250 persons and more)
2	Medium (100–249 persons)
3	Small (10–99 persons)
4	Micro (less than 10 persons)

1.2.   Enterprise ownership *(Select only one answer):*

1	State-owned
2	Collective
3	Private
4	Mixed

1.3.   Legal form of the enterprise *(Select only one answer):*

1	Limited liability company
2	Joint-stock company (open or closed)
3	Cooperative
4	Private enterprise (certificate)
5	Public institution
6	Another form (write) _____

1.4.   In which economic activity does the enterprise operate? [10]

A	Agriculture, forestry and fishing	1
B, C, E	Mining and quarrying and other industry	2
D	Manufacturing	3
F	Construction	4
G, H, I	Wholesale and retail trade, transportation and storage, accommodation and food service activities	5
J	Information and communication	6
L	Real estate activities	7
M, N	Professional, scientific, technical, administration and support services	8
O, P, Q	Public administration, defence, education, human health and social work activities	9
R, S, T, U	Other services	10

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[9] Definitions of micro and small and medium-sized enterprises often vary by country.

[10] The more detailed structure of the International Standard Industrial Classification of All Economic Activities can be used.
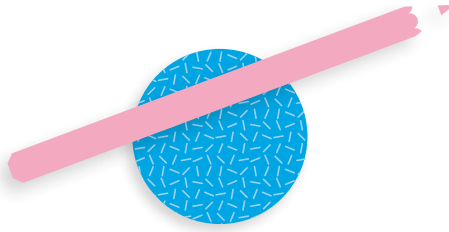
1.5. **Could you please briefly describe the main business activity of the enterprise (this specific establishment) and indicate your main products or services:**

_____
_____
_____
_____

1.6. **Could you please give us approximately the distribution of the market sales of your products or services:**

Locally, within a certain town or local area	%
Regionally within the country	%
Nationally	%
Outside the country	%
TOTAL	**100%**

1.7. **How many people are currently employed in your establishment (full-time and part-time)?**

		TOTAL
1	Currently (as …., 2016)	_____
2	Last year (as …., 2015)	_____

1.8. **Could you please indicate approximately how many employees of your establishment work in each of the following occupations:** _(If an employee has more than one occupation, choose the main one, i.e. the one to which most work hours are dedicated. Also provide the education level that is most common among your employees in each occupation category)_

Occupational groups	Number of employees					
	Female			**Male**		
	Currently	1 year ago	Education most common	Currently	1 year ago	Education most common
Managers						
Professionals						
Technicians and associate professionals						
Clerical support workers						
Services and sales workers						
Skilled agricultural, forestry and fishery workers						
Craft and related trades workers						
Plant and machine operators and assemblers						
Elementary occupations						

SECTION 2. Recruitment

2.1. **Now we would like to ask questions about <u>any hiring</u> that your establishment has attempted over the past 12 months.** *(Please, put an 'X' in the relevant columns)*

|			Occupation									
			Managers	Professionals	Technicians and associate professionals	Clerical support workers	Services and sales workers	Skilled agricultural, forestry and fishery workers	Craft and related trades workers	Plant and machine operators and assemblers	Elementary occupations
In the past 12 months, have you tried to hire any [OCCUPATION]?	YES	1									
	NO	2									
Did you encounter any problems when trying to hire [OCCUPATON]?	YES	1									
	NO	2									
What problems did you encounter?											
1	There were no or few applicants										
2	Applicants lacked required qualification/education level										
3	Applicants lacked required technical skills										
4	Applicants lacked required core/soft skills										
5	Applicants expected wages higher than we can offer										
6	Applicants did not like working conditions we can currently offer										
7	Applicants lack the required work experience										
8	Other (specify _____)										

2.2. **If you mentioned that some applicants lacked the necessary skills, could you please indicate which skills were lacking?** *(You can select all the skills that are lacking)*

	Occupations with skill problems		
	Occ 1	Occ 2	Occ 3
Technical skills required for this occupation			
Technical skills relating to specific equipment or processes used in the establishment			
Technical, technological or scientific knowledge			
Understanding written documents and writing clearly			
Ability to calculate, read and use figures and tables			
Learn to learn skills			
Negotiation skills			
Acquiring, interpreting and communicating information			
Leadership skills			
Team working			
ICT skills			
Decision-making skills			
Problem-solving skills			
Efficient use of materials, technology, equipment and tools			
Ability to work accurately and in compliance with standards			
Organisational and planning skills			
Any other skills			

2.3. What is the percentage of staff turnover during a year?

1	None
2	0–10%
3	10–25%
4	25–33%
5	33–50%
6	+ 50%
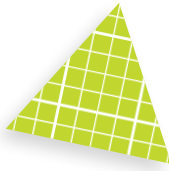
Now we would like to turn to the skills within your existing workforce.

3.1   How many of your existing staff would you regard as being fully proficient at their current job?
(Please put an 'X' in the relevant columns)

	All	Nearly all	Over a half	Some	Very few	None
Managers						
Professionals						
Technicians and associate professionals						
Clerical support workers						
Services and sales workers						
Skilled agricultural, forestry and fishery workers						
Craft and related trades workers						
Plant and machine operators and assemblers						
Elementary occupations						

3.2 **For those not fully proficient, what would you say were the particular skills that are missing?**
Please grade in a scale from 1 (no importance) to 5 (extremely important)

	Managers	Professionals	Technicians and associate professionals	Clerical support workers	Services and sales workers	Skilled agricultural, forestry and fishery workers	Craft and related trades workers	Plant and machine operators and assemblers	Elementary occupations
Technical skills required for this occupation									
Technical skills relating to specific equipment or processes used in the establishment									
Technical, technological or scientific knowledge									
Understanding written documents and writing clearly									
Ability to calculate, read and use figures and tables									
Learn to learn skills									
Negotiation skills									
Acquiring, interpreting and communicating information									
Leadership skills									
Team working									
ICT skills									
Decision-making skills									
Problem-solving skills									
Efficient use of materials, technology, equipment and tools									
Organisational and planning skills									
Other									

3.3   What is being done to overcome the problem of skills gaps?

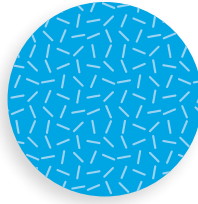| 1	Hiring has increased
2	Further training has been provided
3	Other strategies have been used to promote learning
4	Work practice has been changed
5	Work location within the company has been changed
6	No special measures have been taken
7	Influence has been used on (providers of) education in order to ensure the inflow of newcomers
8	Other measures
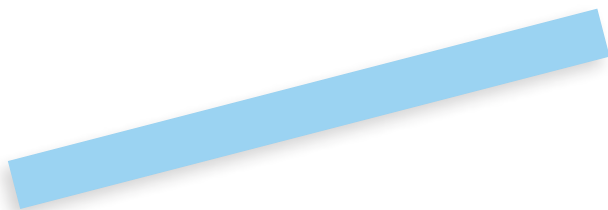
4.1. **During the past 12 months, have your employees participated in any training courses organised within or outside of the workplace and financed in whole or in part by the enterprise?**

	YES	% of employees who took part in professional training
Managers		
Professionals		
Technicians and associate professionals		
Clerical support workers		
Services and sales workers		
Skilled agricultural, forestry and fishery workers		
Craft and related trades workers		
Plant and machine operators and assemblers		
Elementary occupations		

4.2. **In which areas did your company finance the training?**

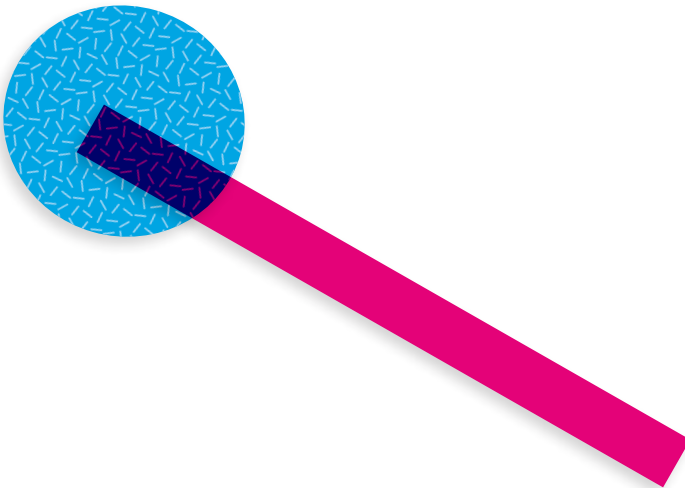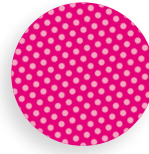| Training fields	Managers	Professionals	Technicians and associate professionals	Clerical support workers	Services and sales workers	Skilled agricultural, forestry and fishery workers	Craft and related trades workers	Plant and machine operators and assemblers	Elementary occupations
Induction training									
Occupational health and safety									
Compliance with regulatory requirements, customer requirements or quality system requirements									
Literacy/numeracy									
Foreign language									
IT training									
Management and administration									
Training in new technology/new product or service									
Environmental protection									
Accounting and finance									
Any other types?									

4.3. What is the average duration of staff participation in training?

	# of days	# of hours
Managers		
Professionals		
Technicians and associate professionals		
Clerical support workers		
Services and sales workers		
Skilled agricultural, forestry and fishery workers		
Craft and related trades workers		
Plant and machine operators and assemblers		
Elementary occupations		

5.1. **Considering the situation of your business today, how high is the probability of hiring new employees in the coming 12 months?**

	I will reduce the number of workers	0% no hiring	0–15% low	15–50% medium	50–75% high	75–100% very high	I already have vacancies
Managers							
Professionals							
Technicians and associate professionals							
Clerical support workers							
Services and sales workers							
Skilled agricultural, forestry and fishery workers							
Craft and related trades workers							
Plant and machine operators and assemblers							
Elementary occupations							

If the response in 5.1 is reduction in the number of workers, for each occupation selected:

5.2. **In the following occupations your expectations are to reduce the number of employees; what would be the main reason?** *(Select only one answer)*

	Reduction of production	Changes in the technology used	Readjustment of workforce	Use of offshoring or subcontracting	Other reasons
Managers					
Professionals					
Technicians and associate professionals					
Clerical support workers					
Services and sales workers					
Skilled agricultural, forestry and fishery workers					
Craft and related trades workers					
Plant and machine operators and assemblers					
Elementary occupations					

If the response in 5.1 is over 50%, for each occupation selected:

5.3. **In the following occupations your expectations are to increase the number of employees; what would be the main reason?** *(Select only one answer)*

	Expansion of production	Changes in the system of production	Replacement of older workers	Other reasons
Managers				
Professionals				
Technicians and associate professionals				
Clerical support workers				
Services and sales workers				
Skilled agricultural, forestry and fishery workers				
Craft and related trades workers				
Plant and machine operators and assemblers				
Elementary occupations				

6.1. **Compared to other employers in the same sector, would you say that the pay and benefits you offer are better, worse or about the same?**
Please grade in a scale from 1 (worse) to 5 (better)

	White collar skilled	White collar semi-skilled	Blue collar skilled	Blue collar semi-skilled
Pay and benefits level				

6.2. **Which, if any, of the following practices are used to manage performance in your workplace?**

	White collar skilled	White collar semi-skilled	Blue collar skilled	Blue collar semi-skilled
Agreeing formal objectives				
Staff appraisals and performance reviews				
Individual learning and development plans				
Regular one-to-one meetings				
Regular staff meetings				
Other (please specify)				

6.3. **Which, if any, of these arrangements are available in your workplace?**

|	White collar skilled	White collar semi-skilled	Blue collar skilled	Blue collar semi-skilled
Job descriptions and tasks adapted to employees' preferences and abilities				
Flexible working hours				
Involvement in the assessment of the quality of outputs (e.g. quality circles, total quality management)				
Joint management and employee committees to discuss product and process development and quality issues				
Incentive programmes related to performance (e.g. performance-related pay, merit bonus)				
Other (please specify)				

6.4. **During the last two years, did your establishment introduce new or significantly improve ways of...**

	YES
Manufacturing or producing goods or services?	
Distributing, organising delivery of your goods or services to customers?	
Managing your organisation, such as maintenance systems or operations for purchasing, accounting or computing?	

6.5. During the last two years, did your establishment start using...

	YES
New business practices to organise your workplace's main activity, such as supply chain management, knowledge management, lean production, quality management?	
New methods of organising employees work, responsibilities and decision-making?	
New methods of working with other firms or public institutions such as outsourcing, sub-contracting, partnerships)?	
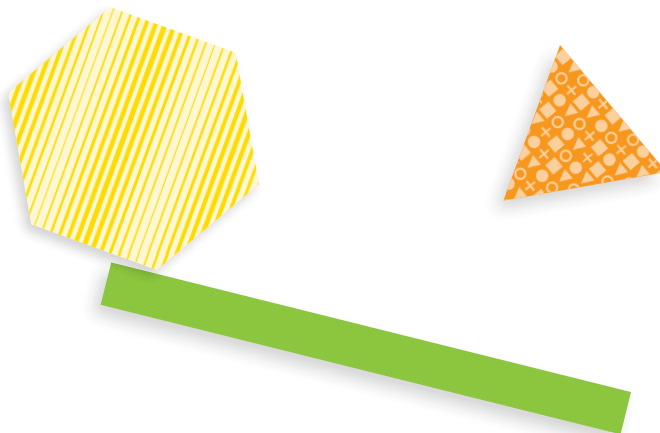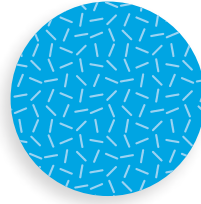
COMPLEMENTARY SUB-SECTION ON RECRUITMENT

Now we would like to focus on first-job seekers.

2.1. **In the last 12 months has your company hired any first-job seekers who came straight from secondary school, technical and vocational school or university?**
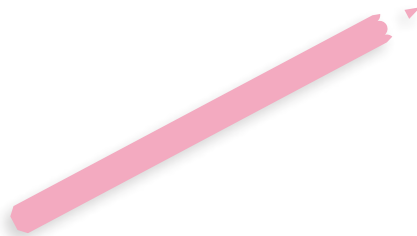
1 — yes   2 — no

2.2. **Were they...**

	Yes	No
First-job seekers coming from compulsory general secondary school		
First-job seekers coming from technical and vocational school		
First-job seekers coming from university or other higher education institution		

2.3. **How well were they prepared for work for each category?**

	Very well prepared	Well prepared	Prepared	Poorly prepared	Very poorly prepared
First-job seekers coming from compulsory general secondary school					
First-job seekers coming from technical and vocational school					
First-job seekers coming from university or other higher education institution					

2.4. **In which of the following areas was the preparation of the newly hired workers lacking?**
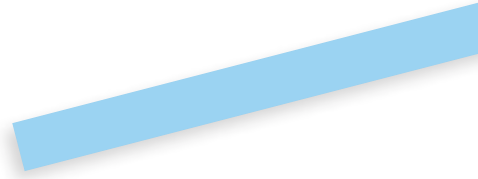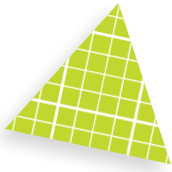*(You can select all relevant fields for each group)*

	First-job seekers coming from compulsory general secondary school	First-job seekers coming from technical and vocational school	First-job seekers coming from university or other higher education institution
Lacking required technical or job-specific skills			
Lacking required core/soft skills (e.g. ICT skills, problem-solving skills, team-working skills)			
Literacy/numeracy skills			
Poor education			
Poor attitude/personality or lack of motivation (e.g. poor work ethic, punctuality, appearance, manners)			
Lack of working world/life experience or maturity (including general knowledge)			
Other (please specify)			
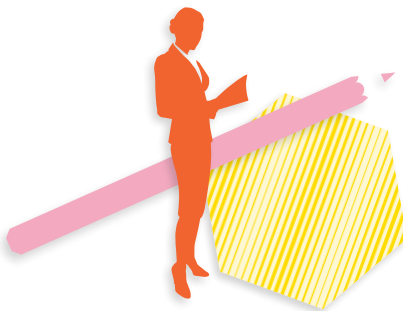
ALTERNATIVE SECTION ON RECRUITMENT FOCUSING ON VACANCIES

2.1. At this moment do you have vacancies?

Yes	(Number of vacancies_____)
No	

2.2. Have any of these vacancies been unfilled for more than 3 months?

| Yes	
No	

2.3. Could you please indicate how many vacancies are proving hard to fill?
(Up to five occupations)

Occupation	Approximate number of hard-to-fill vacancies
Occupation 1:_____	
Occupation 2:_____	
Occupation 3:_____	

2.4. For each of the previous occupations, could you please indicate the reasons why they are hard to fill? *(You can select all relevant reasons for each occupation)*

	Occupations with hard-to-fill vacancies		
	Occ 1	Occ 2	Occ 3
Too much competition from other employers			
Not enough people interested in doing this type of job			
Low number of applicants with the required skills			
Low number of applicants with the required attitude, motivation or personality			
Low number of applicants generally			
Lack of work experience the company demands			
Lack of qualifications the company demands			
Job entails shift work/unsociable hours			
Remote location/poor public transport			
Others			
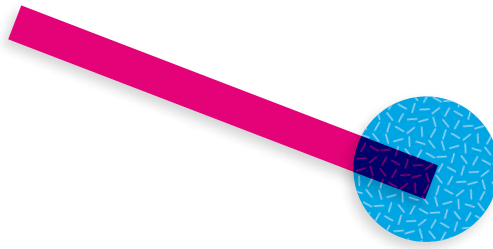
2.5. Could you please indicate which of the following skills were lacking?
(For each occupation you can select all the skills you think were lacking)

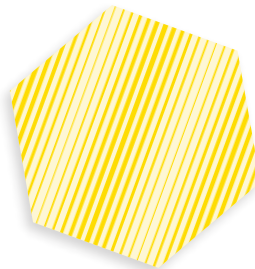|	Occupations with hard-to-fill vacancies		
	Occ 1	Occ 2	Occ 3
Technical skills required for this occupation			
Technical skills relating to specific equipment or processes used in the establishment			
Technical, technological or scientific knowledge			
Understanding written documents and writing clearly			
Ability to calculate, read and use figures and tables			
Learn to learn skills			
Negotiation skills			
Acquiring, interpreting and communicating information			
Leadership skills			
Team working			
ICT skills			
Decision-making skills			
Problem-solving skills			
Efficient use of materials, technology, equipment and tools			
Organisational and planning skills			
Any other skills			

2.6. Are hard-to-fill vacancies causing this establishment to… *(You can select all relevant answers)*

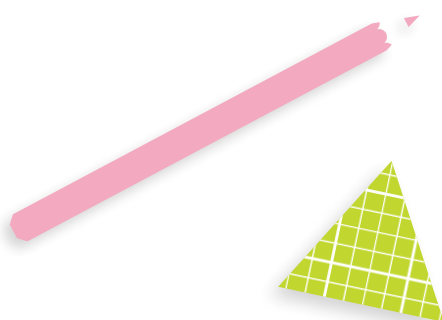| Effects on business	YES
Lose business or orders to competitors	
Delay developing new products or services	
Have difficulties meeting quality standards	
Experience increased operating costs	
Have difficulties introducing new working practices	
Increase workload for other staff	
Outsource work	
Withdraw from offering certain products or services altogether	
Have difficulties meeting customer services objectives	
Have difficulties introducing technological change	
None	

ACRONYMS

|	
Cedefop	European Centre for the Development of Vocational Training
ESS	Employer/establishment skills survey
ETF	European Training Foundation
G20	Group of twenty
ICT	Information and communications technology
ILO	International Labour Organization
ISCO	International standard classification of occupations
ISCO-08	International standard classification of occupations, approved in 2008
LMIS	Labour market information system
LSP	Local strategic partnership
NGOs	Non-governmental organisations
PES	Public employment service
PSU	Primary sampling unit
RDB	Rwanda Development Board
STEP	Skills toward employment and productivity
TVET	Technical and vocational education and training
UKCES	UK Commission for Employment and Skills
UNESCO	United Nations Educational, Scientific and Cultural Organisation
VET	Vocational education and training

KEY TECHNICAL TERMS

Anticipation	Denotes various qualitative and quantitative methods aimed at identifying future skill needs.
Competency	The proven or demonstrated individual capacity to use know-how, skills, qualifications or knowledge to meet usual and changing occupation situations and requirements (UNESCO, TVETipedia glossary: www.unevoc.unesco.org/go.php?q=TVETipedia+Glossary+A-Z&term=Competence%2Fy)
Employability	Refers to the combination of factors which enable individuals to progress towards or gain employment, to stay in employment and to progress during their career (Cedefop, 2008). It includes portable competencies and qualifications that increase an individual's capacity to make use of the education and training opportunities available to secure and retain decent work, to progress within an enterprise and between jobs, and to cope with changing technology and labour market conditions (ILO, 2004).
Employment service provider	This refers to employment service providers in terms of public and private employment services whose main task is to aid job matching. See Volume 4.
Forecasting	Quantitative forecasts produce information on quantitative aspects of future labour markets through statistical projections, econometric models or similar methods. Quantitative forecasts use data about the present and past to estimate future developments (Andersen et al., 2010). Forecasts may include alternative quantified scenarios based on various assumptions. See Volume 2.
Job	A set of tasks and duties performed, or meant to be performed, by one person, including for an employer or in self-employment (ILO, 2012).
Labour market information	Any information concerning the size and composition of the labour market or any part of the labour market, the way it or any part of it functions, its problems, the opportunities which may be available to it, and the employment-related intentions or aspirations of those who are part of it (Mangozho, 2003). See Volume 1.
Labour market information system (LMIS)	A set of institutional arrangements, procedures and mechanisms that are designed to produce labour market information (ILO, 1997). See Volume 1.
Matching	Matching denotes approaches and actions that aim to increase the employability of the workforce and reduce skills shortages, including filling jobs with qualified job seekers. This term is broader than job referral or placement.

Mismatch	An encompassing term referring to different types of skill gaps and imbalances, such as over-education, under-education, over-qualification, under-qualification, over-skilling, skills shortages and surpluses, and skills obsolescence. Skills mismatch can be both qualitative and quantitative, referring both to situations where a person does not meet the job requirements and where there is a shortage or surplus of persons with a specific skill. Skills mismatch can be identified at the individual, employer, sector or economy level (Andersen et al., 2010).
Occupation	An occupation is defined as a set of jobs whose main tasks and duties are characterised by a high degree of similarity. A person may be associated with an occupation through the main job currently held, a second job or a job previously held (ILO, 2012).
Public employment service (PES)	The core functions of public employment services include job search assistance and placement services; collection, analysis and dissemination of labour market information; development and implementation of targeted labour market programmes and services; administration of unemployment insurance benefits, where applicable; and other regulatory services such as oversight of private employment agencies (ILO, 2009). See Volume 4.
Qualification	A formal expression of the vocational or professional abilities of a worker which is recognised at international, national or sectoral level. An official record (certificate, diploma) of achievement which recognises successful completion of education or training, or satisfactory performance in a test or examination.
Skill	A term often used with very different meanings. In this guide, skill is understood as the ability to carry out mental or manual activity, acquired through learning and practice, where skill is an overarching term which includes knowledge, competency and experience, as well as the ability to apply these to complete tasks and solve work-related problems.
Skills shortage	Used in this guide as a quantitative term to describe a situation in which certain skills are in short supply, for example where the number of job seekers with certain skills is insufficient to fill all available job vacancies.
Skill gap	Used as a qualitative term to describe a situation in which the level of skills of the employee or a group of employees is lower than that required to perform the job adequately, or the type of skill does not match the job requirements (Cedefop, 2010).
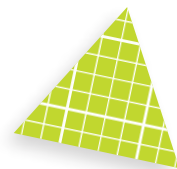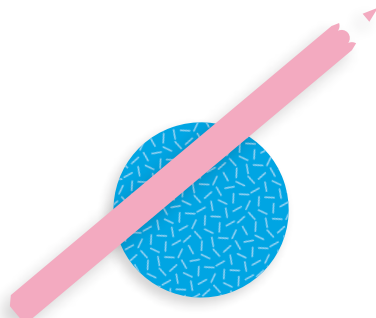
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This guide is a part of the ETF, ILO and Cedefop series of guides on skills anticipation and matching. All the guides follow a common structure, although they vary in level of detail, technical content and case studies. The ETF, Cedefop and the ILO worked closely together to develop the guides, usually with one agency/organisation taking the lead and the others providing inputs, case studies, comments and reviews. All guides have undergone extensive validation and peer review; they were also discussed in detail in international expert seminars in which academic representatives, anticipation and matching experts, and potential end users from across the world provided comments and feedback on content and usability. Experts and staff of the three organisations also peer reviewed the guides before their publication.

This volume covers the development and carrying out of establishment skills surveys. Such surveys are designed to generate data on employers' skills needs and their human capital development strategies. If done regularly, the surveys help to analyse the trend in skills needs and identify potential skills bottlenecks. Survey results can be used in designing and improving training provision, career guidance, skills development policy evaluation, and reshaping business strategies for human resource management and development. The audience for this guide is mainly those who make decisions about undertaking surveys and oversee their implementation (in ministries, human resource development agencies and other relevant bodies) and those directly involved in survey design and implementation, such as survey managers, data collectors and analysts.