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CARRYING OUT TRACER STUDIES

GUIDE TO ANTICIPATING AND MATCHING SKILLS AND JOBS VOLUME 6

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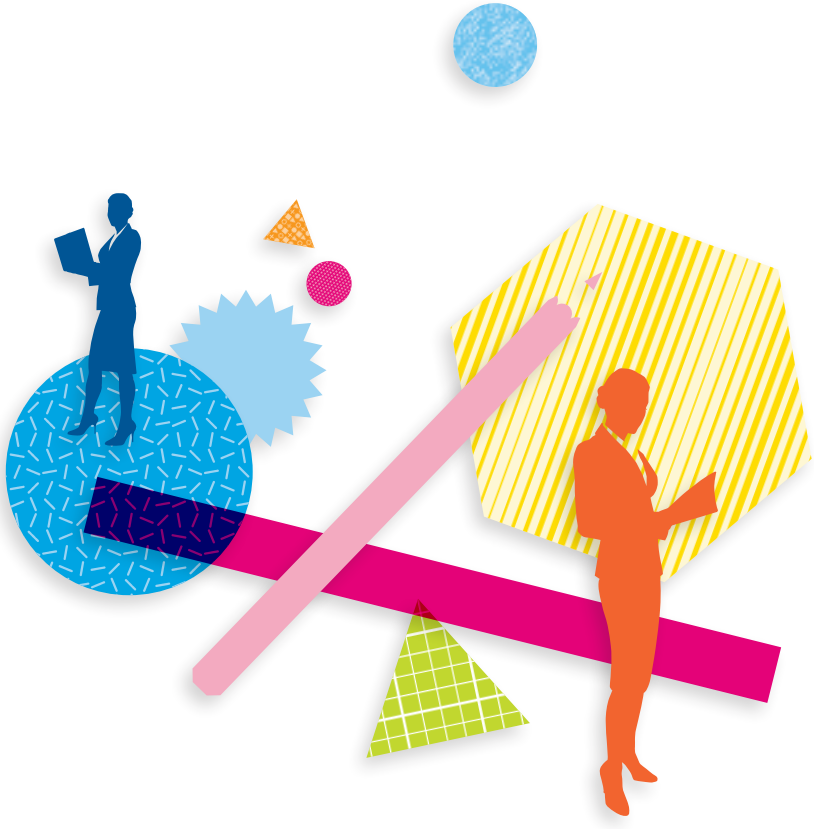
Compendium on
Anticipation and
Matching of Skills

CARRYING OUT TRACER STUDIES

GUIDE TO ANTICIPATING AND MATCHING SKILLS AND JOBS VOLUME 6

Harald Schomburg



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 high 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 build a better life for individuals by improving employability, social mobility and inclusion.

The European Union (EU) places great emphasis on skills anticipation and better matching. 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 that have succeeded in linking skills to gains in productivity, employment and development have targeted skills development policy towards 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 multiple 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 make decisions on the type and content of the training courses to be delivered; and employers, as they take decisions on 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 lifelong learning perspective, enabling them to adapt to rapidly changing labour market requirements and conditions.

Given the complexity and dynamics of the process, perfect matching between skills demand and supply is neither feasible (especially in rapidly changing labour

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

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 socio-economic conditions, 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 better, and 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 and combined 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 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 conducive to better understanding the skill needs of tomorrow. They target professionals, policy makers, researchers, social partners and experts who need 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 international good practice and experience worldwide. 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 the 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.

Chris Evans-Klock
Chief of the Skills and Employability Branch
Employment Policy Department
ILO – International Labour Office, Geneva

Madlen Serban
Director
ETF – European Training Foundation

Joachim James Calleja
Director
Cedefop – European Centre for the Development of Vocational Training

ACKNOWLEDGEMENTS

This guide on tracer studies was commissioned by the ETF to help stakeholders in education and training institutions to analyse the paths and outcomes of learners after completion of study programmes of all forms.

Harald Schomburg is the main author and the work reflects both his acknowledged expertise and also his belief in innovative approaches to tracer studies; these are based on high standards of research and on bottom-up partnerships of education and training institutions committed to self-improvement.

The conception and drafting of the guide benefited from the motivating context of the team of ETF colleagues who, from the start, supported the author with relevant examples and practical suggestions for contextualisation of the guide to scarcity of resources and capacities, and to limitations in information systems in many countries. This team learned much throughout this process and has committed to share the acquired experience and knowledge with colleagues inside and outside of the ETF. Eduarda Castel-Branco (project coordinator), Christine Hemschemeier (country manager for Kyrgyzstan) and Eva Jansova (statistical officer) are grateful for this opportunity for learning and cooperation in this project. Other ETF colleagues started using elements of the guide in the country projects, and their feedback provided additional insights: thanks also to Martiño Rubal Maseda and Filippo Del Ninno.

The guide underwent several rounds of discussion and review, notably at the experts' validation meeting of 7 and 8 March 2014 (in Prague), whose many pertinent reflections helped to improve the first draft. Acknowledgements are expressed to Hans Rutjes (ROA), Olga Strietska-Ilina (ILO), Alena Zukersteinova (Cedefop), Aomar Ibourk and Lizzi Feiler. Valentina Barcucci (ILO) contributed detailed comments and suggestions for the first draft.

The Editorial Board of the ETF is also thanked for its contribution to finalising the guide. Cedefop also contributed at this stage (editing).

Without these inputs, this guide would not have been possible.

Responsibility for the views expressed and any remaining errors lies solely with the author.

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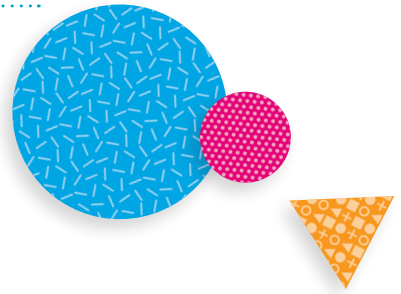

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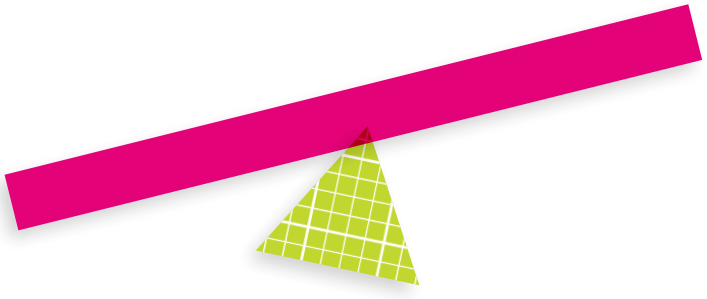

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Executive summary

Overview of the content and use of this guide

Surveys of former participants of education programmes are often called tracer studies or graduate surveys. In some countries we also find other terms: alumni surveys (in the US), follow-up surveys or graduate career tracking system.

The tracer studies practitioner is the main focus of the guide. All chapters are relevant for this group of users, regardless of whether they are temporarily engaged with tracer studies as school teachers, university lecturers or administrative staff, or as professional research staff in research institutions, consulting firms or ministries. Managers of education institutions and other policy and decision makers who want background knowledge about tracer studies should only read selected chapters. Every chapter has an introduction with indications on its relative importance for the different user categories. The guide is accompanied by five technical annexes, useful for key users.

The overall methodological setting outlined in this guide can be applied, with the adjustments required by different available capacities and resources, to both settings: more centralised approaches to conducting tracer studies, which ministries and their agencies lead; and more bottom-up initiatives, with the education institution in the driving seat.

This guide provides a step-by-step introduction to the wide range of different tracer study approaches and offers practical proposals for the key questions on how a tracer study should be designed: Which graduates should be included? At what time after graduation should the tracer study be conducted? How can the graduates be contacted? What can be done if no valid addresses are available? Which data collection methods should be used? What are the requirements and procedures of data analysis? How can misinterpretations of findings be avoided?

The guide addresses the key problems of the usability of tracer studies: low response rates and high costs. For institutional tracer studies (those conducted by schools, colleges or universities) the guide provides practical solutions for achieving high response rates and low costs. A wide range of examples from different countries and sectors of education and training have been used in this guide.

Data from institutional tracer studies, which usually try to obtain regular feedback from all graduates of a school/college/university about one to two years after graduation, allow the employment and work situation of graduates to be linked to their educational experiences at the level of study/training programmes. If institutional tracer studies are of sufficient quality, the data could also be used for a national monitoring system or for benchmark surveys in the context of education reform projects/programmes.

The guide is oriented towards high methodological standards and practical experiences in many countries. Although national and subject/sector specifics are relevant for every tracer study, existing international good practice is helpful to guide beginners and more experienced tracer study projects alike. International standards and experiences are very relevant for the development of the research instrument, the tracer study questionnaire. Two questionnaire versions are provided with this guide: a minimal version which was designed to be used with very few adaptations/changes; and a module version, which is a toolbox of different topics and questions from which some elements could be selected. Both questionnaires use questions and standardised answers already tested and used in many surveys, so measurement quality (validity and reliability) is assured and important prerequisites of comparability of the survey results are met.

The guide emphasises the need for methodology reporting to support the credibility of any tracer study.

Use of tracer studies

Tracer studies are widespread in higher education but also often employed in the VET (vocational education and training) / TVET (technical vocational education and training) ([2]) sector.

In many countries, conducting tracer studies is a formal requirement for the accreditation of study programmes. Programmes/projects seeking reform of TVET, which try to improve skills match and the transition from school to work, use data from tracer

[2] TVET is an international term used to denote vocational education and training (VET). The two terms are used interchangeably throughout this publication.

studies to measure their effectiveness. Education institutions are also increasingly interested in feedback from their former students to improve their study programmes, and to show new applicants how their graduates have managed the transition to employment.

Graduates are usually invited to provide feedback about their experiences on the labour market one to two years after graduation.

The information required from the graduates commonly includes:

(a) duration of search for the first job;

(b) methods of job search;

(c) employment status at the time of the survey (about one to two years after graduation);

(d) income level;

(e) working time;

(f) type of contract;

(g) job title;

(h) economic sector (private or public);

(i) economic branch;

(j) required knowledge and skills (competencies);

(k) relationships between study and work (horizontal and vertical match);

(l) further education and training;

(m) regional and international mobility;

(n) personal background characteristics.

Sometimes this core information from graduates is supplemented with aspects of educational experiences before and during the course of study/training, such as the knowledge and skills gained, practical and work experience, evaluation of the study conditions and provisions. Such information is especially useful if the tracer study is to allow conclusions about the relevance of elements of education/training (such as the curriculum) to the labour market.

Tracer studies are not limited to simple descriptive information about the labour market success (the whereabouts) of the graduates. Results of tracer studies provide insights and contributions to explain the labour market situation of the graduates, and stakeholders and users are interested in which elements of the study conditions and provisions have effects on the employment outcomes. Context variables, such as the economic situation, the regional labour market and individual mobility and motivation, need to be taken into account to avoid misinterpretation of results.

Bottom-up partnership approaches have been useful in encouraging education institutions to engage in developing tracer study approaches that are tailored to local conditions with limited resources, such as in the TVET sector in Kyrgyzstan. Building local initiatives into wider networks, combined with elements of technical-methodological support, can spark highly motivated involvement from education institutions in tracer studies aimed at systematic analysis for self-improvement, and based on high standards of implementation of the research. Mutual trust among stakeholders is once more essential in growing such initiatives, and in freeing them from manipulation.

This guide offers users a range of examples and links to relevant international networks, which will, doubtlessly, encourage and motivate many readers to explore the lessons from tracer studies from around the world.

Chapter 1.
Tracer studies at a glance

1.1. Overview

This chapter explains the key concepts of tracer studies and also summarises recommendations for institutional tracer studies.

(a) Several examples of national and international tracer studies are outlined.

(b) The feedback for curriculum development and other aspects of improving the study conditions and provisions is very often the most important aspect of institutional tracer studies.

(c) Information about job search, employment conditions and work are taken as signals of the labour market chances of graduates from different study programmes.

(d) It is recommended that regular tracer studies should include all graduates from one cohort of graduates (same year of graduation), who should be surveyed about one to two years after graduation.

This chapter is especially relevant for leaders and administrators of education institutions who might not be involved directly in a tracer study. They can learn about the production of knowledge from tracer studies, and weaknesses and strengths. This knowledge is necessary to make meaningful decisions about the design of the study and practical solutions based on the results.

1.2. Objectives and potential readers of this guide

1.2.1. Relevance of education/training

It is the aim of this guide to contribute to improving TVET, as well as higher education, by conducting high-quality graduate surveys or tracer studies. Such studies should allow analysis of the impacts of study programmes and conditions at education institutions. The key objective is to identify the relevance of education/training for the transition to a job and further vocational career in the first years after graduating.

1.2.2. New demand for tracer studies

Many countries are experiencing growing demand to introduce a system of tracer studies due to requirements of reaccreditations and quality management. Education institutions are often forced by law to implement regular tracer studies, and demand from various donor agencies or stakeholders (such as the World Bank, EU, Asian Development Bank and the national agencies) to collect empirical evidence about the relevance of the education/training is also growing.

1.2.3. Potential readers

Readers of the guide can find detailed instructions on how to design a tracer study, develop the questionnaire and do the data analysis, without being an expert in survey methodology. It is aimed mainly at people from education institutions who are going to introduce tracer

studies at their own institution (institutional tracer studies).

The guide will show how to:

(a) plan and design a tracer study;

(b) formulate the research questions/objectives;

(c) develop the questionnaires;

(d) collect and update the addresses of former students;

(e) organise the data collection;

(f) analyse the data and interpret the results.

The guide is also targeted at other user categories:

(a) policy and decision makers (national, regional and sector levels) seeking to obtain information and data to inform decision-making;

(b) research centres and expert networks involved/engaged in carrying out tracer studies for clients;

(c) associations and networks with interest in evidence offered by tracer studies.

Experienced researchers can also learn from the guidelines how to apply their knowledge to the specifics of tracer studies.

Each chapter has at the beginning a rating of the importance of the content for the different potential readers.

1.2.4. TVET and higher education tracer studies

Institutional tracer studies are much more developed in higher education than in TVET. Few TVET tracer studies are published so most examples in this guide are taken from studies in higher education. We believe that tracer studies in the TVET sector can benefit considerably from experiences in higher education.

1.2.5. Background of this guide

The background to this guide is practical experience, gained by the author in many countries, in implementing tracer studies and training research staff.

The guide relies to a great extent on two earlier handbooks, also written with the goal of enabling people from higher education institutions to implement institutional tracer studies: Schomburg, 1995; 2003.

1.3. What are tracer studies?

1.3.1. Definition

A tracer study or graduate survey is a standardised survey (in written or oral form) of graduates from education institutions, which takes place some time after graduation or the end of the training. The subjects of a tracer study can be manifold, but common topics include questions on study progress, the transition to work, work entrance, job career, use of learned competencies, current occupation and bonds to the education institution (school, centre, university).

Various terms are used for graduate surveys:

(a) graduate survey/study;

(b) alumni survey/study;

(c) graduate (career) tracking;

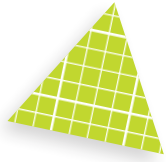
(d) follow-up survey/study;

(e) transition survey/study;

(f) tracer survey/study;

(g) methods of data collection.

Standardised surveys are usually conducted by means of a paper questionnaire or, more recently, online questionnaires.



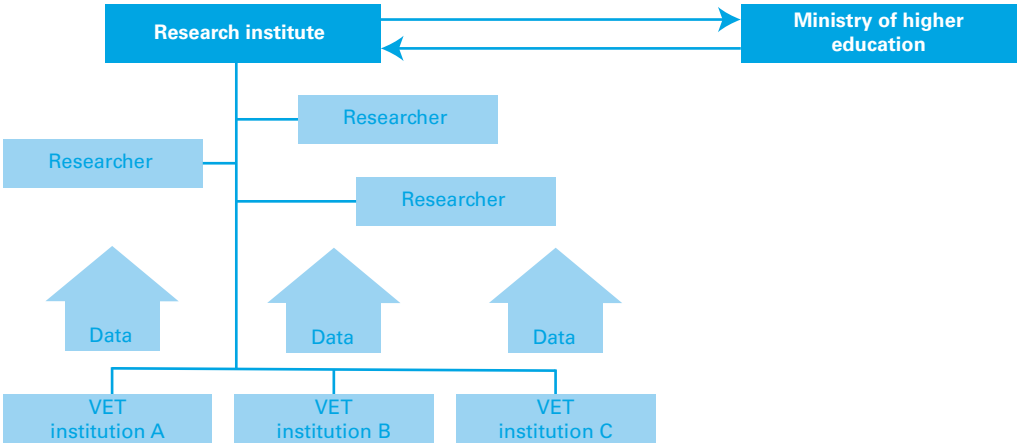
Telephone interviews are also sometimes used, where the interviewer enters the answers simultaneously into an online form (CATI), for example at the Italian inter-university consortium, AlmaLaurea (see https://www.almalaurea.it/en).

1.3.2. Traditional national tracer studies

The traditional type of tracer study is characterised by its centralised approach. A research institute (such as a private consultant or public research institute) conducts the survey according to the needs of a ministry (ministry of education or employment). The individual institutions (TVET or higher education) provide addresses but do not play an active role in the research process apart from technical assistance. In some studies they may send out the invitation letters.

Such representative surveys in higher education have been carried out for about 30 years in some European countries (France, Germany, Italy, Norway, Switzerland). The main objectives are to inform ministries and other central bodies about the labour market success of the graduates. These studies use a national questionnaire (no adaptations for individual institutions) and they do not provide results for individual institutions (except in Switzerland). They can, however, be useful for analysis of skills mismatch at national level in combination with information from other data sources (see Volume 1 for further details).

Figure 1. Traditional national tracer studies



Source: Schomburg, 2010.

1.3.3. Regular tracer studies

Many European countries have regular tracer studies: either annually (in the Netherlands, Switzerland, the UK, or AlmaLaurea in Italy) or every three or four years (the higher education information system (HIS) in Germany, the Centre d'études et de recherches sur les qualifications (Céreq) in France, the national institute of statistics in Italy).

Some TVET tracer studies are conducted annually, for example in the Philippines by the Technical Education and Skills Development Authority (TESDA), in Morocco by the Département de la Formation Professionnelle, and in the Netherlands by the Research Centre for Education and the Labour Market (ROA), a research institute of Maastricht University.

Box 1. Examples of TVET tracer studies

Armenia

Tracer study of recent graduates from vocational education institutions in Kotayk and Ararat Marzes of Armenia (ETF and CRRC, 2012).

Involvement of 2010-11 preliminary and middle level of vocational education system graduates in the labour market (Manukyan, 2012).

Botswana

Tracer study on the employment outcomes of vocational training graduates (Bolaane et al., 2010).

Ethiopia

Tracer study implementation in selected TVET institutions as a part of the GIZ project (Deutsche Gesellschaft für Internationale Zusammenarbeit): *Labour market-oriented education and training,* http://www.giz.de/en/worldwide/18871.html. No published report available.

Georgia

Appendix: tracer study training of the capacity building report (ETF, 2013).

Tracer survey of graduates from vocational training centres, community colleges, and college level diploma programmes at higher education institutions (Fretwell, 2012).

Germany

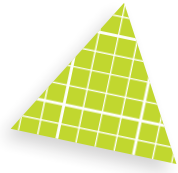
BIBB school leaver surveys; 'BIBB has a strong tradition of survey-based research. It initiates and realises the collection of individual and firm-level data on crucial positions and transitions in the education and labour market system'. http://www.bibb.de/en/14512.php

Indonesia

Implementation of tracer study systems in selected TVET institutions. GIZ project *Sustainable economic development through technical and vocational education and training (SED-TVET),* http://www.giz.de/en/worldwide/16755.html. No published report available.

Lao PDR

National baseline tracer study by GTZ-HRDME (2005, 2007, 2009) (Lao-German programme on human resource development for market economy).



Kyrgyzstan

An ETF project with a strong component on the introduction of institutional tracer studies in the TVET sector, http://www.etf.europa.eu/web.nsf/pages/Kyrgyzstan_EN and http://www.etf.europa.eu/web.nsf/pages/EV_2014_Workshop_on_how_to_develop_a_tracer_study_for_VET_schools?opendocument

Morocco

Since 1987: *études d'insertion et études de cheminement.*

The TVET Department annually carries out tracer studies of TVET graduates to capture a picture of their paths, nine months after graduation. To complete the analysis, the department periodically implements another survey targeted at collecting detailed information from specific cohorts on developments over a period of three years. The latter surveys were carried out in 1987, 1990, 1993, 1996, 1998, 2000, 2002, 2004, 2006 and 2009.

Étude de suivi de l'insertion des lauréats de la formation professionnelle de la promotion 2009: rapport de synthèse [Tracer study of graduates of vocational education and training of 2009] (conducted every two years) (DFP, 2013).

Nepal

Tracer study of technical skills development training graduates, 2008/09 (Development Vision-Nepal, 2012).

Tracer studies of employment fund supported training graduates of 2011 (Development Vision-Nepal, 2013).

Netherlands

Regular school leaver surveys in the Netherlands: 'The school leaver surveys are designed to function as a monitoring instrument for the transition from school to work, covering the full breadth of the Dutch education system. The statistics generated by these surveys contain information on labour market outcomes, competencies and subsequent study activities.' (ROA, *School leaver survey statistics*, http://www.roa-maastricht.nl/?page_id=3727).

Philippines

Impact evaluation study of TVET programmes: 2008 (TESDA, 2010).

Republic of South Sudan

Tracer study implementation as a part of a JICA project (Japan International Cooperation Agency).

SAVOT: *the project for improvement of basic skills and vocational training (phase II).* Tracer survey November 2012, http://www.jica.go.jp/project/english/south_sudan/002/

Rwanda

Tracer study implementation as a part of a JICA project: *Project for strengthening the capacity of Tumba college of technology* (JICA, 2012).

Findings from the TVET graduates database (Mugabi, 2010).

Vietnam

Tracer study implementation in selected TVET institutions as part of a GIZ project: *Reform of technical and vocational education and training (TVET) in VietNam – System advisory services for technical and vocational education and training component,* http://www.tvet-vietnam.org/index.php/en/news/40-general/270-vietnamese-german-cooperation-in-tvet-tracer-study-a-successfully-piloted-initiative

Box 2. Switzerland's regular higher education tracer study

- Information for political authorities (education/employment sectors)
- Benchmarking (system of indicators of Swiss higher education institutes)
- Evaluation and information tool for higher education institutes
- Information for career/study counselling services

Source: Witmer, 2008.

Box 3. Germany's regular higher education tracer study conducted by HIS

Since 1989 every fourth graduation age-group of first degree graduates has been interviewed by the Higher Education Information System GmbH (HIS); 6 000 to 12 000 first degree graduates have participated. The surveys take place about one year after graduation and are complemented by a survey five years after graduation. In single cases HIS has also conducted regional surveys (e.g. in 2001 state-specific surveys in Brandenburg and North Rhine-Westphalia).

Because of the sample design (too small sample size for individual higher education institutions) these national surveys are not used for analyses on the level of individual higher education institutions or of study programmes in individual higher education institutions.

HIS changed its name in 2013 to DZHW-Deutsches Zentrum für Hochschul- und Wissenschaftsforschung GmbH (German Centre for Higher Education Research and Science Studies) (http://www.dzhw.eu/en/index_html).

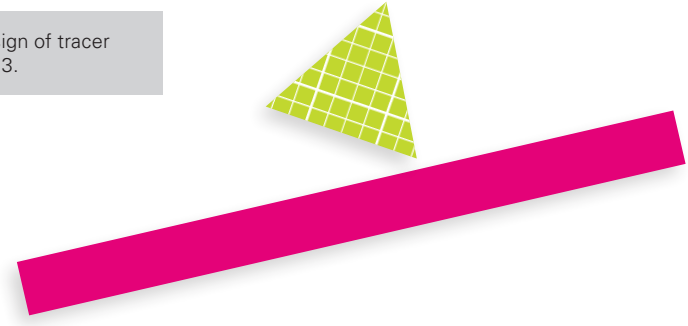
1.3.4. Different conceptions and objectives

Graduate surveys can have very different conceptions and objectives. Apart from internationally comparative surveys (such as the Cheers study coordinated by INCHER-Kassel) and national surveys (in France, Germany, Italy, the Netherlands and Norway), which are normally the responsibility of a central research institute, there is a multitude of decentralised surveys of education/training institutions in many countries which are either designed as interdisciplinary at one education/training institution or are targeted at a single or a few departments or study programmes.

For more details about the design of tracer studies see Chapter 3.

1.3.5. Examples of international tracer studies

Tracer studies which are designed to allow international comparison are very rare. The first European tracer study was the Cheers study, followed by the Reflex (and Hegesco) study. More recently, the International Labour Organization (ILO) school-to-work transition survey (SWTS) [3], which does not focus on graduates from tertiary education, allows interesting comparisons between countries. Basic information about these international studies is presented in Boxes 4 to 6.



Box 4. The Cheers study

In contrast to surveys specific only to single higher education institutions, the Cheers study (Careers after Higher education: a European Research Study) is a large-scale international survey, initiated and coordinated by INCHER-Kassel from 1998 to 2001. More than 40 000 higher education graduates in Europe and Japan have contributed important information on study design by answering a questionnaire on the relationship between higher education, training and work, three to four years after graduation. The Cheers survey was mainly financed by the EU in the framework of funding socio-economic research (TSER). Participation included nine countries of the EU (Germany, Spain, France, Italy, the Netherlands, Austria, Finland, Sweden, the UK); the EFTA country Norway; one Central and Eastern European country (Czech Republic) and Japan as a country outside of Europe.

The survey was done using an extensive questionnaire (16 pages, about 600 variables), which touched many areas: study, course of study, assessment of study conditions, transition to work, qualification and usage of qualifications, relationship between study and work, working conditions (salary, work time, kind of contract), job satisfaction, further training, regional and international mobility, social background and further characteristics.

Major publications of the Cheers study: Schomburg and Teichler (2006); Teichler (2007).

Box 5. The Reflex study

In the year 2004 the Reflex project started as a continuation of the Cheers study, with some changed topics. It centred on a survey of about 30 000 higher education graduates in those countries that had participated in the Cheers survey, plus Belgium, Poland and Switzerland. There were also parallel surveys in Estonia, Russia and several Latin American countries (Proflex). The Reflex project was financed, among other sources, from funds of the 6th Framework Programme Research and Innovation (2002-06) of the EU as a specific targeted research project.

The Reflex project analysed developments in relations between higher education and work in Europe. It took on the challenges of effective higher education training, which are seen as increasingly important because of the development towards a knowledge society, and concentrated on three linked questions: What competencies do higher education graduates need to adequately fulfil work tasks in this knowledge society? What role do higher education institutions play in helping the graduates develop these competencies? What conflicts result from graduates, higher education institutions, employers and other agents trying to reach their own goals and how can these conflicts be solved?

The Reflex survey was methodically very similar to the Cheers survey in the choice of targeted graduates, though Reflex included graduates four to five years after graduating.

Major publication of the Reflex study: Allen and van der Velden (2011).

[3] ILO: *School-to-work transition survey*: http://www.ilo.org/employment/areas/WCMS_140862/lang--en/index.htm

Box 6. ILO school-to-work transition studies

The ILO has been conducting nationally representative school-to-work transition surveys (SWTSs) in developing and middle-income economies (28 target countries in total).

The Work4Youth project is a five-year partnership between the ILO and the MasterCard Foundation. The project field of intervention is data collection and analysis oriented towards policy formulation. The main research focus of Work4Youth is the transitions of young people to the labour market. Evidence on the transition is collected through two rounds of school-to-work transition surveys (SWTSs) run in 28 target countries. The data produced are perfectly comparable across countries and allow for the calculation of benchmarks, as well as for regional and global analyses.

The SWTS is an ILO research tool designed to collect fresh and nationally representative data focusing on the youth labour market and the transition of young people to the world of work. The data in itself is not unique, although it tends to be more comprehensive than a typical labour force survey. What is unique about the SWTS is the development of indicators that define the stages of transition and the quality of transition, and the application of 'decent work' as a concept to be integrated into the analytical framework built around the SWTS. The survey for young people is complemented by a second survey for enterprises. Together the two generate a large pool of data on the characteristics and labour market attachments of young people as well as on the enterprises that could absorb them.

The SWTS serves a number of purposes. First, it detects the individual characteristics of young people that determine labour market disadvantage. This, in turn, is instrumental to the development of policy response. Second, it identifies the features of youth labour demand which help determine mismatches that can be addressed by policy interventions. Third, in countries where the LMIS is not developed, it serves as an instrument to generate reliable data for policy-making purposes. In countries with a reasonably developed LMIS, the survey helps to shed light on areas usually not captured by household-based surveys, such as youth conditions of work, wages and earnings, and engagement in the informal economy.

The first SWTS questionnaires were developed in 2003 by the ILO for structured surveys on the question of gender equality in youth employment. They were first implemented in Indonesia, Sri Lanka and Vietnam to inform the preparation of youth national action plans. In 2004, the ILO developed the analytical framework underpinning the concept of transition to decent work and reshaped the data collection instruments. The new framework was applied between 2004 and 2006 to surveys in 10 countries: Azerbaijan, China, Egypt, Iran, Jordan, Kosovo, Kyrgyzstan, Mongolia, Nepal and Syria.

In 2011, the Work4Youth project took the survey to Eastern Europe, Latin America, South Pacific and Sub-Saharan Africa, in addition to Asia, Central Asia, North Africa and the Middle East. The project implements the surveys through partnerships with the national statistics office (NSO)of each targeted country. The NSOs run the surveys with the technical support of ILO experts providing assistance throughout the implementation process. The information collected is used to produce a national report, which analyses survey findings.

The SWTS datasets and the project's research products are available on the Work4Youth website, http://www.ilo.org/w4y. (Text provided by Valentina Barcucci, ILO.)

Some national reports are already available: http://www.ilo.org/employment/areas/youth-employment/work-for-youth/publications/national-reports/lang--en/index.htm [accessed 3.10.2014].

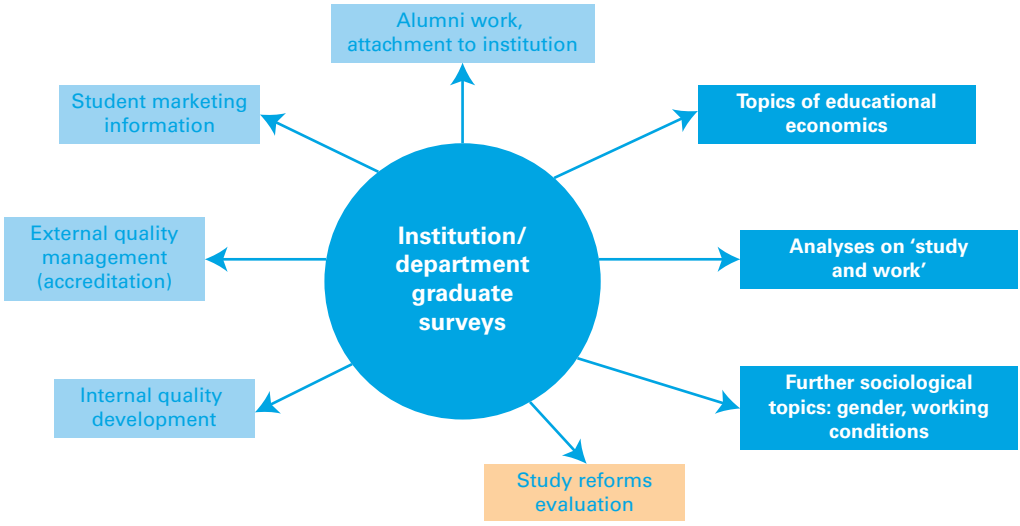
1.4. Institutional tracer studies

During the last 15 years a new type of tracer study emerged: more individual institutions of education are conducting tracer studies, sometimes in close cooperation with other institutions of education (network approach).

1.4.1. Objectives

Such institutional tracer studies could have many objectives (Figure 2) related to feedback for practical conclusions for improving the study/training programme or for research on the relationships between education and work. In the following figure the more practical objectives are indicated in yellow and the more theoretical ones in blue.

Figure 2. Objectives of institutional tracer studies



Source: Schomburg, 2008.

Feedback for curriculum development and other aspects of improving study conditions and provisions is often the most important aspect of such institutional tracer studies. Information about job search, employment conditions and work are taken as signals of the labour market chances of graduates from different study programmes. Of special interest is the horizontal link between education and work. How are the work tasks of graduates related to their study programme and their competencies? Did they obtain the required competencies? Obtaining meaningful answers to these questions also requires consideration

of the relevance of other factors besides education which might explain the 'employment outcome', such as aspects of the socio-biographic background (gender, region, age, work experience before study), study behaviour and labour market conditions.

Such information can also be used to inform potential students (and their parents) and can be useful for graduate job search (career guidance).

These institutional tracer studies are mainly relevant for individual institutions (reports for individual institutions, study programme level breakdown of results) and in some countries they are used also as a national monitor (in Germany, Hungary, Romania).

Many scientific publications use data collected in tracer studies. This data can be used for research publications and sometimes also in research work required for gaining a doctoral degree.

For more details about the objectives of tracer studies see Chapters 3 and 5.
Proposals for questionnaires are provided in Annexes 1 and 2.

1.4.2. Examples of institutional tracer studies

This new type of tracer study can be found in Finland, France, Germany, Hungary, Indonesia, Italy, the Netherlands and Romania. The Proflex network in Latin America can also be counted as being of this type ([4]). The Proflex surveys were carried out by institutions of higher education in Argentina, Bolivia, Brazil, Chile, Honduras, Colombia, Mexico, Panama, Puerto Rico and Uruguay.

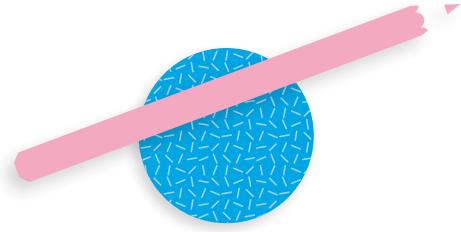
Almost all institutions of higher education in Germany conduct regular tracer studies by themselves or are members of networks for conducting tracer studies. By far the largest network is KOAB ([5]) with about 80 institutions of higher education which every year invite all their graduates 1.5 years after graduation to participate in an online survey; about 70 000 to150 000 graduates are invited and about 30 000 to 60 000 responses are received, giving a response rate of 40 to 50%.

Boxes 7 and 9 provide basic information about the development of new institutional tracer study systems in Romania, Serbia, Montenegro and Bosnia and Herzegovina.

Further examples of tracer studies are provided in Chapter 3.

[4] Proflex: *El profesional flexible en la sociedad del conocimiento [the flexible professional in the knowledge society]*: http://www.encuesta-proflex.org/ [accessed 3.10.2014].

[5] KOAB: *Das Kooperationsprojekt Absolventenstudien [the graduate survey cooperation project]*: http://koab.uni-kassel.de/en/koab.html [accessed 3.10.2014].



Box 7. The Romanian tracer study

The first phase

- This addressed graduates who finished their studies in 2005 and 2009.
- Some 55 public and private universities participated.
- During four contact stages, from November 2010 to March 2011, each university invited its graduates to fill in the questionnaire.
- One invitation and three reminders were sent by mail and e-mail.
- The filling in of the questionnaire ended on 31 March 2011, with 39 293 respondents.

The second phase

- This addressed graduates who finished their studies in 2006 and 2010.
- Some 42 public and private universities participated, using the updated questionnaire.
- It had five contact stages, between 2 April 2012 and 30 April 2012.
- One invitation and four reminders were sent by e-mail and only optionally by mail.
- New contact methods were used: short message invitations sent to graduates with a valid mobile number, online self-registration form available on the project's website.
- The contact process was implemented with the help of an online platform, developed by UEFISCDI ([a]), which helped with automatic sending of e-mails and response centralisation.
- The filling in of the questionnaire ended on June 2012, with 9 294 respondents.

([a]) The executive unit for financing higher education, research, development and innovation

Source: University Graduates and Labour Market: Romanian tracer study: http://www.absolvent-univ.ro [accessed 3.10.2014].

Box 8. Congrad: tracer studies in Serbia, Montenegro and Bosnia and Herzegovina

'The Congrad project's wider objective is to enable higher education institutions (HEIs) in Serbia, Montenegro and Bosnia and Herzegovina to continuously conduct graduate surveys for the purpose of enhancing study offerings and facilitating permanent modernisation processes.

'Congrad is expected to contribute to the improvement of institutional self-evaluation processes by collecting systematic and reliable information on the links between study offerings and subsequent employment of graduates, as well as enable the evidence-based evaluation of higher education reforms and curricular changes in the last decade. Taking into account previous study conditions and the occupational career of graduates, Congrad aims for a general insight in country specific conditions of the transition from higher education to labour market, and shall enable partner country HEIs to make evidence-based strategic decisions. In more specific terms, Congrad is expected to result in the implementation of a systematic data collection system about alumni at partner countries' HEIs.'

Source: Congrad: project description: http://www.congrad.org/project-description/ [accessed 3.10.2014].

Box 9. Hungary: new network tracer study

External motives for graduate career tracking system (GCTS)

- Act on higher education: 'higher education institutions shall fulfil the tasks in career tracking, in which they shall monitor the labour market situation of graduates'
- Institutional accreditation
- Three-year financing agreement with government
- External application sources

Internal motives for GCTS

- Training and service development: labour market feedback
- Marketing: competitive advantage in entrance exam competition
- Part of quality assurance
- Information for career orientation (what is the value of the degree?)
- Alumni programmes, labour market connections (sponsorship opportunities later)

Source: Educatio Public Services Nonprofit LLC

1.5. Tracer studies timing and target population

Most tracer studies focus on just one homogenous group of students/trainees (a 'cohort') who finished their study at the same time point (generation or graduation cohort, for example graduates of the year 2013 or 'generation 2013').

Regular tracer studies should include only one cohort.
For more details see Chapter 3.

Closely related to the question of the cohorts of graduates to be included in the study is that of the timing of the survey with respect to graduation. How much time should pass until the graduates/trainees are invited to participate in the study?

Most regular tracer studies in higher education are conducted between one year and three years after graduation (Costa Rica, France, Germany, Hungary, Indonesia, Italy, Switzerland). The 'first destination surveys' in the UK and Australia are exceptional, being conducted about six months after graduation.

There are different considerations in deciding the best time after graduation for the study. Six months after graduation may be considered too early, but it can also be argued that a tracer study should be done only a few months after graduation because this provides rapid feedback and the graduates are easier to contact. Both arguments can be supported but can also be

criticised in relation to the objectives of the tracer study. If the results are to be helpful in improving study programmes it is necessary for most graduates to have managed the transition to employment and had some relevant work experience. In poor labour market conditions it makes no sense to conduct the survey too early when most graduates are still looking for their first job.

> Regular tracer studies should include only one cohort, which will be asked to participate about one to two years after graduation.
> For more details see Chapter 3.

1.6. Survey sample size

All graduates of one cohort should be invited.

In general the target group (or target population) in tracer studies of individual subject areas in a single institution of education is the total population of graduates; the aim is to achieve the participation of nearly all graduates in the survey.

Institutional tracer studies need participation from as many graduates as possible from the different study programmes. Not all graduates invited will participate; the response rate is usually far below 100%. Therefore, in every tracer study the participants are just a sample of all graduates. Since most institutional tracer studies are looking for results to improve study programme curricula, they need results across different study programmes; general results at the institution level are usually not relevant for the specifics of individual study programmes.

As in most institutional tracer studies the number of graduates is relatively low, sampling is not necessary. Even if the participation of all graduates of an individual cohort is the goal, the response may sometimes be below 25%.

Institutional tracer studies should include all graduates of one cohort, who will be asked to participate about one to two years after graduation.
For more details see Chapter 3.

1.7. Tracer study feasibility

The feasibility of tracer studies depends on two main factors:

(a) availability of valid addresses;

(b) willingness of graduates to participate (response rate).

A low response rate can bring doubts about potential bias in the participating graduates. If they are not representative of the total population, the usability of the results is also in question.

Obtaining addresses can be a difficult and time-consuming task. Often it is not possible to obtain the actual addresses from an updated register (as it is possible in Norway, Finland and Sweden).

Several approaches must be considered:

(a) sometimes it is necessary to collect the address information from units, faculties or departments within an education institution;

(b) manual entry of addresses not stored electronically;

(c) use addresses for parents of the graduates (usually held in registration records);

(d) involve the media in publicising the tracer study;

(e) alumni associations might provide addresses;

(f) employers (such as schools and universities and other known employers of graduates) might provide addresses;

(g) the 'snowball technique' asks graduates for addresses of friends who also graduated with them; Facebook and other social networks can assist.

Addresses held for graduates become invalid as they move to a different location for work or training; the more time that has passed from time of graduation, the more the validity of addresses is in question. A lot of strategies are possible for updating the addresses. For example, all graduates of the target population can be called by students to announce the upcoming tracer study and to obtain a valid e-mail address.

Very often low response rates of less than 30% are reported from tracer studies, though some achieve 50% or more. It is almost impossible to compare the response rate between different studies, because design elements are very different.

A key factor in achieving a high response rate is the number of reminder actions. Usually up to two reminders are sent in mail surveys, meaning that those who did not answer were contacted three times.

Other factors which might contribute to the response rate include:

(a) the relevance of the questionnaire;

(b) the quality and layout of the questionnaire;

(c) the kind and content of the invitation letters.

Graduates should be contacted at least three times (two reminders).
For more details see Chapter 7.

1.8. Main tracer study objectives

1.8.1. Key research questions/objectives

Almost all tracer studies should provide answers to the following questions.

(a) What happens to graduates after leaving the education/training institution?

(b) Were they able to get paid employment in an acceptable time?

(c) Do they use the skills and knowledge they have gained in the education/training institution? If not, what are the reasons?

(d) What are the skills and competencies demanded in the labour market?

Such questions are usually covered by the two main objectives of tracer studies:

(a) to measure the employability of graduates (labour market information); key related topics:
  (i) employment situation;
  (ii) time to get the first employment;
  (iii) duration of job search;
  (iv) salary/income;
  (v) position;
  (vi) economic sector;
  (vii) main work tasks/duties;
  (viii) working time;
  (ix) job satisfaction;
  (x) use of competencies and required competencies;
  (xi) usefulness of study/training programme;

(b) to collect feedback from graduates to improve the study programme (retrospective evaluation); key related topics:
  (i) further education and training (education pathways);
  (ii) need for further education and training;

(iii) evaluation of the study/training programme;
(iv) strengths and weaknesses of the study/training programme;
(v) proposals for improvements.

The potential of tracer studies, in comparison to education or job market statistics, lies in the combination of objective and subjective data and in the flexibility to cover the topics relevant for individual education/training institutions.

The content of tracer studies (the questionnaire) can be flexible and easily customised for the specific needs of individual institutions or study/training programmes.

Besides the purely quantitative criteria of job success (salary, position, work conditions) there might also be questions about individual motivation, satisfaction and reasoning. Studies/graduate surveys can draw a picture of individual study careers, motivations for choosing a study programme, and the transition to work and job career.

Graduate self-assessment allows for statements about the use of knowledge gained during studies, matching with expectations in the job, and the adequacy of the employment. Graduates can also retrospectively rate the conditions in their study programme and at their education/training institution.

A broad range of aspects of employment, work and prior learning experiences can be included in a tracer study, not just simple descriptive findings. Tracer studies might also explain the causes of professional success and analyse the impact of various features of TVET institutions (Figure 5).

For more details about the objectives of tracer studies see Chapters 2 and 4.

1.9. Stakeholder needs

Although different stakeholders might have their own specific needs regarding the information to be collected from graduates, it should be possible to reach agreement on the relevance of core questions (see the example in Annex 1). All stakeholders must be interested in obtaining high-quality data and so should support necessary efforts. But not all stakeholders have the same information needs and compromise may be required.

Career guidance and student counselling are areas which may use objective information on the whereabouts of graduates. Information about the time needed to get a first job after graduation and employment conditions is useful to those who are interested in starting study or are current students.

People engaged curriculum development might be also interested in these objective data, but they are typically also looking for information which enables them to decide which improvements should be undertaken. An evaluation of study conditions and study provision by graduates, as well as the information about the use of competencies, is often seen as very helpful.

A mutual agreement about the objectives of the tracer study requires trust among stakeholders that the results are not misused. For example, in some countries the results are not published in a way which would allow the identification of individual institutions, to avoid misleading rankings. Since interpretation of the results requires the use of contextual information, such as educational background, motives of students and the situation in the regional labour market, publication of pure data about the employment situation of graduates could be used in an incorrect way.

1.10. Study organisation and management

Institutional tracer studies often have the following characteristics.

(a) Staff from education institutions play a key role in the development of all survey tasks.

(b) Staff from education institutions usually need training in survey methodology and instrument development.

(c) The questionnaire should be relevant for the individual institution.

(d) All graduates (no sample) of one year are invited one to two years after graduation to participate in the survey.

The key challenges are related to:

(a) establishing a database with contact details of valid (updated) graduate addresses;

(b) using appropriate methods to obtain a high response rate;

(c) manipulating and analysing the data in a way that allows conclusions related to the research questions.

A tracer study team is necessary with the following functions:

(a) project coordinator (education expert; contact person);

(b) team members with the following responsibilities: project management; IT (online questionnaire); report writing and presentations; statistical analysis;

(c) external partners.

It has to be decided in which unit of the TVET/higher education institution the tracer study will be located.

Looking to international experiences, a wide variety of organisational solutions is possible.

In universities in Indonesia, the hosts of the tracer studies are found mainly within career development centres. This is also the case in Hungary, while in Germany most tracer studies are done in the context of units responsible for quality management/assurance. Since these units also regularly conduct other surveys (such as course evaluation, student and academic staff surveys) they are a kind of institutional research centre. In some universities, research staff from the faculty of social sciences or education cooperate with these units. Sometimes offices for alumni affairs are also responsible for tracer studies.

Many management tasks occur in every institutional tracer study:

(a) work and responsibility distribution;

(b) team communication/meetings;

(c) work flow control;

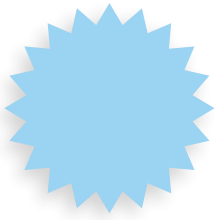
(d) scheduling.

Regular meetings of the team with control of the work done and future planning is a very important aspect of a successful tracer study.

From the beginning, meetings should take place every week at a fixed date and time. Minutes of these meetings are helpful and should be checked and formally agreed by the team members at the next meeting.

1.11. Costs of a tracer study

The costs of tracer studies vary. National representative tracer studies in the higher education sector in Germany (sample size about 60 000



graduates; returned questionnaires about 10 000) are very expensive (about USD 1 million) because a mailed paper questionnaire with reminders is used and staff costs are included.

Institutional tracer studies can be done with very low budgets: as little as USD 200 is required to update the addresses of 500 graduates. If only employees of the TVET/higher education institutions are involved in the tracer study then no other costs exist.

For more details about the costs of tracer studies see Section 3.11.

1.12. Basic steps in a tracer study

A tracer study can be performed within 12 months.

In general, implementation involves the three steps shown in the following figure, which are described in detail in this guide.

Figure 3. Three basic steps of a tracer study

Concept and instrument development; Preparation of data collection	Data collection with reminder actions	Data analysis and report writing; dissemination activities; actions
Four months	Four months	Four months
Chapters 3 to 6	Chapter 7 and 8	Chapter 9 and 10

For each step of the survey, this guide provides instructions, advice, recommendations and rules which will offer significant help to conduct high-quality surveys.

1.13. Training

Institutional tracer studies usually require the training of people from the education institutions in all phases of the study. This guide can be used as training material because it should enable the user to:

(a) plan and design a tracer study;

(b) formulate the research questions/objectives;

(c) develop the questionnaires;

(d) collect and update the addresses of former students;

(e) organise the data collection;

(f) analyse the data and interpret the results.

The participating universities and *Fachhochschulen* of the German tracer study network (KOAB) can send members of their individual tracer study team to four or five training workshops regularly provided by INCHER-Kassel. Every year all network members also participate in a compulsory network conference where the key issues of project development (such as changes to the questionnaire) are discussed and decided.

Institutional tracer studies need a process of capacity building at every individual institution in order to be done successfully to a high standard.

The training should cover all phases of the tracer study:

(a) the concept of institutional tracer studies (kick-off);

(b) questionnaire development;

(c) preparation of the field phase;

(d) data collection and method report;

(e) data analysis and report writing;

(f) dissemination activities.

Trainers should have a broad theoretical and methodological background as social scientists, with special expertise in education research. They must have practical experience in tracer studies, including writing reports on results. Usually they should have published works in the area of the relationships between education and work.

1.14. Cooperation among tracer study researchers

The Cheers and Reflex surveys show that through cooperation and common learning processes it is possible to overcome the idiosyncrasies of single researchers in favour of a common concept that proves fruitful for a multitude of issues. Even though the cultural and disciplinary background of the 40 to 50 graduate researchers who cooperate in the international surveys is very diverse, together they developed a questionnaire, and, thus, a consensus on the relevance of theories and methods was reached.

The German KOAB network, the Hungarian tracer studies and the higher education studies in Indonesia can be regarded as positive examples of fruitful cooperation among individual institutions.

These positive experiences can also encourage attempts to reach a common understanding on tracer studies/graduate surveys for TVET/higher education institutions through cooperation of graduate researchers. This would remove a burden from the individual education/training institutions which need to conduct cost-efficient and high-quality graduate surveys. The possibilities of result comparison would also be dramatically raised through standardisation, and with that the possible uses of benchmarking as a means of introducing methods of quality management.

1.15. Minimum requirements for tracer studies

This guide was developed with the objective of helping the reader conduct a high-quality tracer study relevant for improvements in TVET/higher education. Such a study often requires the persons charged with the conduct of the survey, data analysis and report writing to have specific competencies which do not exist at the institutional level. Practical experience of quantitative surveys must be obtained where it does not exist, so development of a system of regular institutional tracer studies should be organised as a learning process; this is the key minimum requirement. As long as the persons responsible for the study are motivated to continuously improve their knowledge and abilities in the relationship between education and work and methodology of tracer studies, high-quality results can be expected which can lead to improvements. Institutions must acknowledge this work and support it with sufficient working time and other resources.

On average, 20% of the regular working time (about eight hours per week) of the key persons responsible for the tracer study should be allocated to the study, including time for individual learning. This amount of time is needed for the duration of the study, which is about one year; the phase of the study will determine if the time is really needed or if more time must be allocated.

All graduates who graduated one to two years ago should be invited to participate in the tracer study. Those graduates are often easy to access and might have already gained relevant work experience. It is not recommended that the survey be focused on graduates who are still in the process of job search, which might be the case for around six months after graduation.

Annex 1 provides a minimum version of the specimen questionnaire for a TVET/higher education tracer study; this can be used as the starting point for an own questionnaire, with adaptations of the specimen questionnaire according the specifics of the study/ training programme, but no major changes. The questionnaire is ready to use because the questions have been tested and used already in many studies.

The length of the questionnaire is not directly linked to the return rate. A very short questionnaire provides only very limited information about the labour market experiences of the graduates, but the efforts to achieve a sufficient response rate are almost the same as in the case of a longer and richer questionnaire.

It is recommended that a paper rather than an online questionnaire be used, because a paper questionnaire has more flexibility. It can be delivered and collected by post or in person. For instance, graduates might be invited to come to the institution for a certain event and the questionnaires can be distributed and collected there.

Any tracer study requires a database (it can be an Excel file) with names and addresses of the graduates. Verification and updating of the data should be done, but it is not necessary at the start of the exercise to have verified and updated all addresses; the survey can be launched at any time with existing addresses. It should be documented in the report what kind of addresses were used. It is usually not recommended that only the addresses of the alumni club be used, because they are often highly selective.

Often the response rate is used as a key indicator for the quality of a survey. Since the response rate depends very much on the kind of efforts undertaken by the researchers and not on the inherent motivation of the graduates it is recommended that at least one reminderbe sent, but a minimum required response rate for tracer study cannot be stated.

It is recommended that a professional tool such as SPSS (Statistical Package for the Social Sciences) or R be used for data entry and data analysis, but in the beginning Excel might also be used.

R is a powerful freeware (open source) for statistical analysis of data and has developed quickly during recent years. For institutions with limited financial resources it would be a good choice to have staff with knowledge and experiences of R for any kind of statistical analysis.

In reporting the findings, attention should, from the beginning, be on two aspects: the report on the methods and interpretation of findings.

The method report should inform the reader about the following:

(a) objectives of the tracer study;

(b) questionnaire;

(c) target population;

(d) address database;

(e) activities to collect the questionnaires;

(f) response rate;

(g) representativeness of the participating graduates.

Interpretation of findings should be given, at least for questions related to the key research questions.

Chapter 2.
Key objectives of tracer studies

2.1. Overview

The objectives of tracer studies are very different, but some common elements can be identified. Some tracer studies produce only simple descriptive findings about the employment situation of graduates, while others try to explain the employment situation by analysing the links between employment and education.

Tracer studies of individual TVET institutions (or individual study programmes in the TVET institution) can produce valuable information for a broad range of actions/functions of TVET institutions.

A tracer study should:

(a) be valuable for a broad range of stakeholders;

(b) cover a broad range of aspects of employment and work;

(c) give some explanations of the causes of professional success/employment outcomes;

(d) analyse the impact of various features of education to gain empirically based hints for improvement.

The study should be designed in a way that ensures feedback which is motivating and is valuable for considering improvements in TVET/higher education institutions.

These are the typical main objectives, but other objectives might also be considered.

2.2. Links between education and employment

Surveys of graduates from institutions of education and training, here called tracer studies or graduate surveys (otherwise also named alumni surveys) are the most valuable single type of survey for collecting systematic and reliable information on the links between study and subsequent employment and work.

Tracer studies provide information on the whereabouts of graduates some time after the awarding of the degree, and they can link this with socio-biographic and study descriptors (gender, age, field of study, institution awarding the degree).

Graduate surveys enable illustration of features of the career 'success' of graduates in general, as well as giving some indication of which students from which sectors of higher education subsequently fare better than others.

Tracer studies can provide feedback for improvements in TVET and higher education. This is the main objective of such studies in many countries.

Box 10. Institutional tracer studies of the Technical University Berlin, Germany

'The alumni's feedback is an important source for the Technische Universität Berlin for adapting study terms to the needs of our students and easing our alumni's' transition into professional life. The information we gain provides various approaches for the development of our study programmes and the improvement of our service centres. Based on the results of the survey, we can specifically expand the range of key qualifications we offer. Findings on the progress of studies and career paths will be used by the Career Service and study consulting.' [a]

'The purpose of this graduate survey is to gather important information about the transition to Master courses and/or the professional world, as well as to collect data about the current career situation of graduates in the first years following their Bachelor or Master studies. How do you evaluate the time of your studies in retrospective? And today: are you employed or a PhD student, on parental leave, etc.? Your experiences will contribute to the improvement of the quality of studies. To get meaningful results, every contribution is important.' [b]

[a] Technische Universität Berlin: Absolventenbefragungen: *information on the graduate survey:* http://www.tu-berlin.de/qualitaet/evaluation/absolventenbefragungen/information_on_the_graduate_survey/parameter/en/ [accessed 6.10.2014].

[b] Technische Universität Berlin: Absolventenbefragungen: *Objectives of the graduate survey:* http://www.tu-berlin.de/qualitaet/evaluation/absolventenbefragungen/objectives_of_the_graduate_survey/parameter/en/ [accessed 6.10.2014].

2.3. Education programme relevance

Several aspects of employment and work, as well as prior learning experiences, might be included in tracer studies to analyse the links between education and work.

The survey can cover a broad range employment and work outcomes:

(a) employment status;

(b) salary;

(c) working time;

(d) type of contract (temporary/unlimited);

(e) typical job assignments;

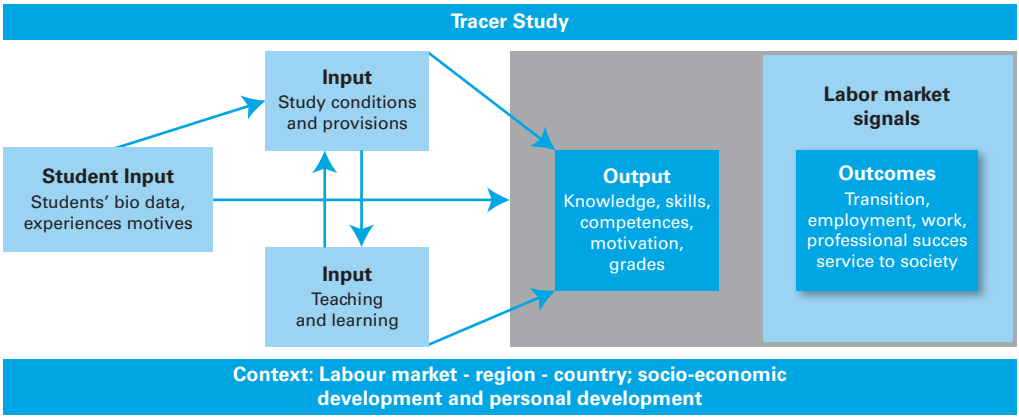
(f) job requirements;

(g) job satisfaction;

(h) utilisation of knowledge;

(i) links between levels of education attainment and position.

Figure 4. Conceptual framework for tracer studies



Source: Schomburg, 2003.

Findings are not limited to simple descriptive points: studies can address many topics which can be 'causally' linked with each other:

(a) individual study preconditions (student input) such as gender, parental and regional background, motivations and abilities;

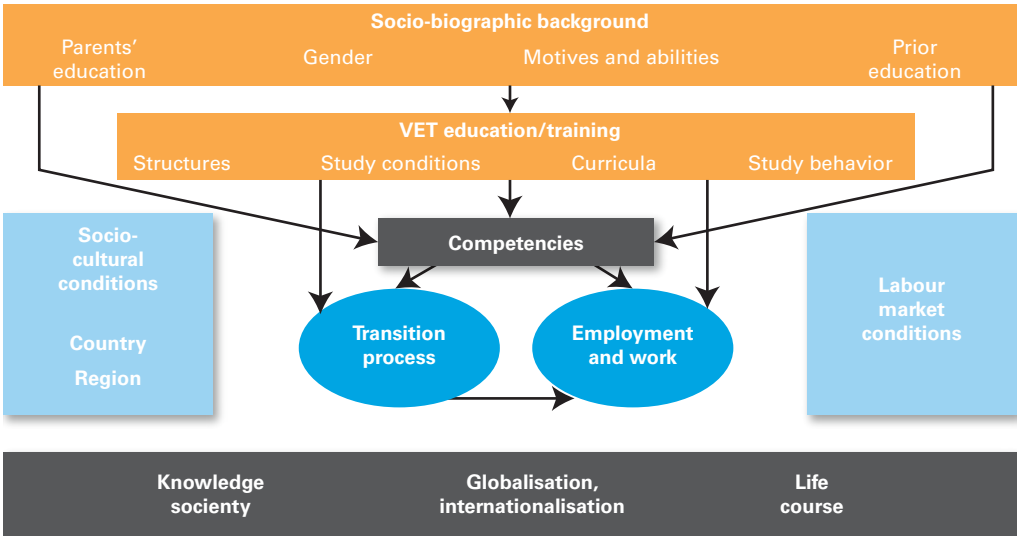
(b) resources, study conditions and study provisions (input such as curriculum, teacher motivations and abilities);

(c) processes of teaching and learning (process);

(d) development of competencies (output);

(e) the transition from education to work and job career (outcome) (see Figure 5 and Figure 6).

Figure 5. Model for the analysis of the relationships between TVET/higher education, education/training and employment and work



Source: Schomburg, 2003.

A broad range of criteria of professional success (benefits of education) are needed: a 'match' between the demands of the labour market and the society at large would be too narrowly viewed, if links between the field of study and the area of work were the only information base.

The tracer study should allow the measurement of:

(a) horizontal match (relevance of field of study to the work tasks; extent of use of knowledge and skills acquired during study);

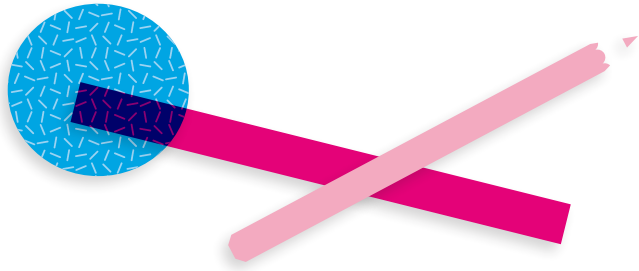
(b) vertical match (appropriate position regarding the level of education; salary level and other employment conditions).

For more details on operationalising the links between education and work see Chapter 5 and the questionnaires in Annexes 1 and 2.

A low horizontal match (skill mismatch) might be taken as a signal to adapt the curriculum, but inferring such policy implications is only meaningful if other potential factors are considered. Is the skill mismatch combined with a low vertical match? Is the skill mismatch a temporary phenomenon influenced by the economic cycle? Or is the skill mismatch a typical experience of young graduates in the transition phase to getting a more relevant and stable job (life cycle effect)? Are the knowledge and skills acquired during study more relevant in later stages of the career? It is obvious that tracer studies could provide a lot of answers to these questions, but only if the questionnaire used has a broad scope and if the design of the tracer study allows answers to be collected from graduates who have 'real' work experience after graduation. Tracer studies also have limitations. For example, they may lack information on the broader labour market context or be biased, and should therefore be complemented by employer opinions. They should be combined with other data sources and methods of skills anticipation and matching. These are described in detail in other volumes of the guide ([6]).

Basic information about the ETF match project, which address skills mismatch as a challenge in most ETF partner countries, is provided in Box 11.

[6] Volume 1 provides an overview of different data sources and indicators which can be developed from them, including standard economic and labour market statistics. Volume 2 focuses on development of skills forecasts and foresights, Volume 4 on data from public employment services and Volume 5 on the development of establishment skills surveys.



Box 11. ETF: Match – Innovation and learning project (TED)

1. Why does ETF address 'matching of supply and demand of skills for the labour market'? Matching is about reducing the gap between supply and demand in the labour market, increasing the employability of the workforce and reducing skills shortages. The focus of the ETF project lies on education and training in a lifelong learning perspective, monitoring, anticipating and forecasting approaches, for both the demand and the supply side, and effective labour market management. Skills mismatch, a challenge in most ETF partner countries, leads to adverse impacts on individuals and whole economies, resulting in high youth unemployment and low competitiveness of enterprises. There is a need for effective approaches for better monitoring and forecasting of skills supplies and skills demands which also work under the framework conditions of ETF partner countries. Global competition, technology-dependency and industrial restructuring cause rapidly changing skills demands in transition and developing countries. The supply side of skills is shaped by demographic changes (migration, birth rates, ageing society) and reforms of their education and training (E&T) systems. Improved matching systems are needed for better labour market outcomes. Monitoring and forecasting is not an end in itself but an input to evidence-based policy making. The ETF matching project will therefore explore the question 'who needs what?' There is a need to better inform decision-makers and practitioners in the E&T and the labour market management systems. The overall project objective is to support ETF partner countries to improve their systems for a better matching between the supply and demand for skills in the short and medium term, thus enhancing the employability of youth and adults and improving economic competitiveness.
The specific objectives are i) to provide methodological instruments for measuring mismatch, ii) to develop methodological approaches and instruments for monitoring and anticipating skills requirements which are relevant to the specific conditions in developing and transition economies, iii) to elaborate policy briefs with recommendations for better matching approaches, and iv) to generate and share knowledge among ETF departments and country teams. …

2. To make better use of the skills of high educated young people and contribute to enhanced productivity and competitiveness are top priorities. A mismatch between skills demand and supply leads to high numbers of unemployed people – among them many well educated young – on one side, and on the other side to skills requirements from employers which cannot be met. Large sectors of informal employment constitute a specific 'in' and 'out' for labour market participants, and in some cases a dual economy with modern enterprises at one side, and a traditional sector with low productivity at the other. The problem of skills mismatch has gained additional momentum with the impact of the global economic crisis on the labour markets in ETF partner countries; some have proved more, and others less shock resistant. Mismatch in the form of overeducated young people is triggering migration and means a waste of human resources.

Source: ETF: Match – Innovation and learning project: http://etf.europa.eu/web.nsf/pages/PRJ_2012_WP12_40_17_EN

The tracer study will also address a broad range of dimensions of prior stages of the graduates' life retrospectively:

(a) socio-biographic profile (such as gender and age);

(b) learning prior to enrolment in higher education.

The study will gather relevant information about course of study and competencies gained:

(a) the study conditions and provisions experienced;

(b) own study behaviour;

(c) direct results of study in terms of degree features;

(d) perceived competencies upon graduation.

This will help to show the influence of values and choices of the individuals on their subsequent career.

The statistical analysis will not only provide simple descriptive findings but also try to explain the causes of professional success and to analyse the impact of various features of TVET/higher education education/training.

(a) To what extent do study provisions and conditions matter as compared to the socio-biographic background, prior education, selection at entry and students' study behaviour?

(b) To what extent does TVET/higher education education/training matter in shaping competencies on graduation?

(c) To what extent are competencies on graduation relevant to subsequent employment and work, compared to search strategies and to other recruitment criteria and human resource policies?

A tracer study of individual TVET/higher education institutions can take into account the specific profiles of these institutions and their study programmes. It will provide information on the professional success of graduates both according to common yard sticks (fitness of purpose) and according to the specific aims set by individual institutions and programmes (fitness for purpose).

A complex study can be valuable in providing feedback not only on the degree of professional success, but also on many dimensions of career success and the factors which 'matter' in contributing to it. These should not be compared purely with a national average or with graduates from the specific field of study, but should include the role played by the characteristics of individual TVET/higher education institutions and study programmes.

2.4. Outcome assessment in quality assurance

Tracer studies not only excel in measuring output/outcome but can also help in explaining it, and therefore allow for outcome-oriented assessments of study achievements.

Graduate (and employer) surveys offer one form of empirical study which can provide valuable information for evaluating the results of education and training from a specific institution of education. This information may be used for further development of the institution in terms of quality assurance.

An advanced approach to tracer studies should enable the TVET/higher education institution to gather information to indicate possible deficits in a given educational programme and to serve as a basis for future planning activities.

For this, information on the professional success (career, status, income) of the graduates is needed, as well as information on the relevance of knowledge and skills (relationship between knowledge and skills and work requirements, area of employment, professional position).

Graduates might also be asked to assess the study conditions and provisions they experienced retrospectively (evaluation in a narrow sense). This helps graduate surveys give valuable information on the conception of teaching with regard to job-oriented competencies/key competencies.

2.5. Career guidance and marketing

Information from studies can help the vocational orientation of current and prospective students.

There is also the opportunity to use alumni contacts to:

(a) present personal experience reports by graduates;

(b) place people on traineeships;

(c) present organisations;

(d) establish contacts between students and the job market.

Data from graduate surveys can also be used as an information source on study and careers, including by employment service providers together with data on vacancies and job applicants (see Volume 4).

Data can be used to analyse factors of success and can support students in the choice of specialisations, while self-assessment by graduates (competencies, job requirements, criteria for success) can show the benefits of key qualifications and further qualifications.

2.6. Information for different stakeholders

Knowledge of employment fields, mobility and graduate satisfaction helps the general positioning of the TVET/higher education institution and is useful for stakeholders.

A tracer study can be designed in such a way that it can be valuable for a broad range of stakeholders who are interested in acquiring knowledge about the links between study and subsequent employment:

(a) government;

(b) quality assurance agency;

(c) employers;

(d) employment agencies;

(e) professional associations;

(f) academic staff in higher education;

(g) teachers in TVET/higher education;

(h) managers of TVET/higher education institutions;

(i) prospective students and their parents;

(j) students;

(k) the graduates themselves.

These objectives can only be reached if the results of the tracer study are available to the public. Unfortunately, most tracer studies in the TVET/higher education sector sponsored by donor agencies are not available to the public: results are restricted to the sponsoring organisation.

2.7. Alumni office

Graduate surveys can also fulfil various functions in alumni work.

(a) Establishing a database of addresses for graduate surveys lays groundwork for broader contacts which can lead to a long-term attachment of graduates to the TVET/higher education institution.

(b) Graduate surveys also offer the opportunity of presenting the offers of alumni work as well as enquiring about possible interest in further education for graduates and, if applicable, defining target groups. This is also related to the marketing potential of tracer studies.

(c) The retrospective assessment of study conditions for graduates is an indicator for the assessment of process, as are their careers, their experiences on the job market and their long-term job success.

2.8. Accreditation

Many countries have accreditation procedures for educational programmes or institutions. Regular tracer studies are a formal requirement for such accreditation processes in some countries (such as Germany).

Topics that could be relevant for accreditation/ evaluation include:

(a) transition to employment situation (time until the first employment, search time, search methods, employment characteristics of the first job);

(b) employment situation at the time of the survey (working time, kind of contract, salary, fringe benefits);

(c) work (job title, economic sector, work tasks, required competencies);

(d) acquired competencies and used competencies;

(e) evaluation of the study programme;

(f) relationships between study and work.

Chapter 3.
Tracer study design

3.1. Overview

In this chapter answers are provided for key questions which must be addressed in the early stage of any tracer study.

(a) What are the objectives of the tracer study?

(b) Which students/graduates should be invited to participate?

(c) Which survey instruments will be used?

Developing a tracer study is a complex process because each decision at one stage has consequences for the others.

3.2. The design cycle

In an early stage of the tracer study decisions have to be undertaken on:

(a) the target population (who will be invited to participate in the survey);

(b) the time after graduation when the survey should take place;

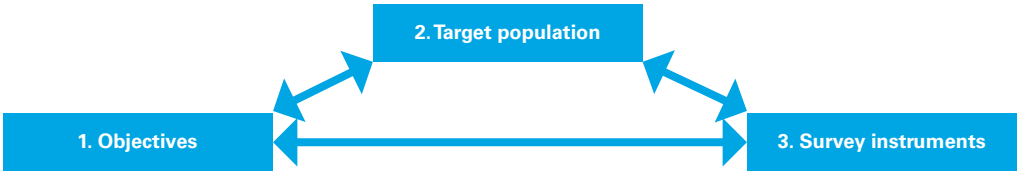
(c) the methods of data collection (online or paper questionnaire);

(d) the kind of survey (cross-sectional or panel survey);

(e) the coverage of the survey (sample or census).

Design elements must meet the specified objectives of the tracer study as these two are closely related. Figure 6 demonstrates a feedback process for checking if the selected design elements fit the objectives.

Figure 6. The design cycle



3.3. Target population

Most tracer studies focus on one homogenous group of students/trainees who finished their study at the same time (generation or graduation cohort). Such a group is called a cohort, as in graduates of the year 2013 or 'generation 2013'.

The national graduate surveys in many countries (e.g. in Australia, France, Germany, Italy, Malaysia, Norway, Switzerland, the UK) select only one cohort as their target population.

The main reason for the decision to select only one cohort is the fact that the conditions of the transition to the labour market and education experiences might be quite different for different cohorts. It is assumed that for one cohort/generation the conditions are similar and comparable. Differences between cohorts (if a tracer study is done every year) are called 'cohort effects' if they can be differentiated from the effect of a survey being done in a certain year (effect of the historical time) or at a specific time after graduation (age effect).

For an explanation/interpretation of the labour market experiences and professional situation of former students/trainees it is always necessary to take into account the relevant context, which might have changed in a short time. This is especially necessary for countries with education system structural changes and in times of economic crisis.

Another important argument for selecting just one cohort is that including more than one cohort in one survey will hamper the analysis of effects of time. Suppose a survey conducted in the year 2012 includes former students/trainees who finished their study programme in the years 2002 to 2012. Such tracer studies (mixed cohort design) are sometimes used when done on an ad hoc basis and not regularly. Some of the graduates have just finished and others already have 10 years' work experience. General findings from these surveys, such as 'XX% of the graduates are employed' or the 'the average income of the graduates is XXX', are meaningless because the employment situation of graduates might change over time in two respects.

If tracer studies are conducted regularly (every year), it is possible to compare the results of the different surveys to analyse changes over time (trend analysis). Especially when the study programmes have been changed, comparisons between the graduation cohorts would be an interesting analysis of the effects of such changes.

Only if the labour market situation has not changed can the differences of graduation cohorts in some aspects of their evaluation of study conditions or professional success be attributed to differences in their educational experiences (cohort effect).

Recommendation 1: The target population

In general, it is recommended that only one cohort of graduates/trainees be selected.

Justification

A tracer study which includes only one cohort of graduates/trainees is easier and more straightforward to interpret than a survey with mixed cohorts.

The interpretation is easier because it is not necessary to control the results all the time regarding differences by year of graduation.

The conditions of education/training and the labour market situation are similar for one cohort, while in a mixed cohort survey the different conditions/ context have to be considered in the interpretation of the results.

In a mixed cohort survey not only might the conditions/context of education and labour markets be different, but also the duration of employment and work experience (age effects).

Therefore, in a mixed mode tracer study the individual background of the answers of the graduates/ trainees might be quite complex and difficult to disentangle.

3.4. Time after graduation

Closely related to the cohort question is that of the timing of the survey with respect to graduation. How much time should have passed until the graduates/trainees are invited to participate in the study? There are several factors to consider.

It can be argued that a tracer study should be done only a few months after graduation because this design provides rapid feedback and the graduates are easier to contact. Both reasons are pragmatic but can be criticised in relation to the objectives of the study. If the results are to be helpful in improving a study programme, most graduates should have managed the transition to employment and relevant work experience.

A survey conducted about six months after graduation is too early, especially when labour market conditions are poor for young graduates. It makes no sense to conduct the survey when most graduates are still looking for their first job.

New graduates in many countries search for their first job for half a year. Then they start with specific tasks which they have to learn to cope with the work requirements. Mainly it is a situation of training on the job, but sometimes formal training programmes are offered to the graduates.

Therefore, we recommend selecting for the target population of the survey only graduates who have graduated at least one year previously.

A survey conducted about two years after graduation can be a good compromise between access to graduates (not too long ago), currency of the transition phase, and early career and work experience.

As the questionnaire looks at the studies as well as at the professional activity of graduates retrospectively, the studies should not have been completed too long ago. A survey conducted about five years after graduation is usually no longer relevant to an analysis of the transition process and first employment. The focus is more on real work experience and further education and training.

Most regular tracer studies in higher education are conducted between one year and three years after graduation (Costa Rica, France, Germany, Hungary, Indonesia, Italy, Switzerland). The first destination surveys in the UK and Australia are exceptional, being conducted about six months after graduation.

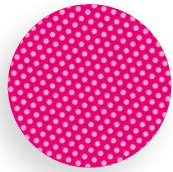
Some surveys of students are also called 'graduate surveys' because they are conducted at the end of study and include questions regarding the transition to employment. It is recommended that the term 'exit surveys' be used for these to make a clear differentiation between a true tracer study and such a student survey.

Recommendation 2: The timing of the survey

In general, it is recommended that the survey be conducted one to two years after graduation.

Justification

The timing of the survey one to two years after graduation is not long after the job search process for the first job. Therefore, relevant information about the transition process can be obtained in such a survey. Most graduates should, at the time of the survey, have entered their first job and had work experience which might be relevant for the analysis of the relationships between education and work (degree of match).



3.5. Data collection methods

Decisions regarding data include:

(a) degree of standardisation of the questionnaire;

(b) method of contacting the graduates (personal, mail, e-mail);

(c) method of collection (interview, self-administered online or paper questionnaire).

Most tracer studies have used written self-administered questionnaires (paper or online). Written standardised surveys are easily implemented for larger numbers and generate low postal distribution costs. Also, the data analysis can be carried out easily and takes little time.

Highly standardised questionnaires might be complemented by open questions, such as those on proposals for improving the study/training programme.

Respondents could also be asked whether they would be willing to participate in a follow-up interview to discuss selected topics in depth.

Further details about standardised questionnaires are provided in Chapter 4.

Since interviewers are not involved with self-administered questionnaires, the questions must be well developed and tested to be sure that they are clear to the graduates and can easily be answered without any further explanation.

Invitations to participate in a self-administered survey can be delivered in a number of ways, including individually, by mail or e-mail, in group settings or using mass media.

Although the invitation and the paper questionnaires can be sent together by mail, another option is to send just the invitation letter with a link to the online questionnaire (possibly accompanied by a personal code).

Interviews are mainly used:

(a) when too little response is expected from postal distribution: a visit by an interviewer/researcher encourages response to a questionnaire;

(b) when the completion of the questionnaire by the interviewee would be too difficult or too poor: in this case, the interviewer is looked on as an instructor;

(c) when too little knowledge exists about a subject area to be able to develop a standardised questionnaire: the interviewer/researcher expands the respondent's knowledge.

Interviews with individual graduates or focus group interviews could give additional insights into the labour market experiences of graduates.

Table 1. Data collection methods

Method	Remarks
Personal interviews	Very time consuming and costly if many graduates are included
Mail survey	Effective measure if addresses are available; main method
Telephone survey	Sometimes used
Online survey	Recommended method; most efficient method if the graduates have fast internet access

The use of online surveys has many advantages:

(a) reduced costs: printing paper questionnaires and data entry are not required;

(b) results of the survey are available very quickly;

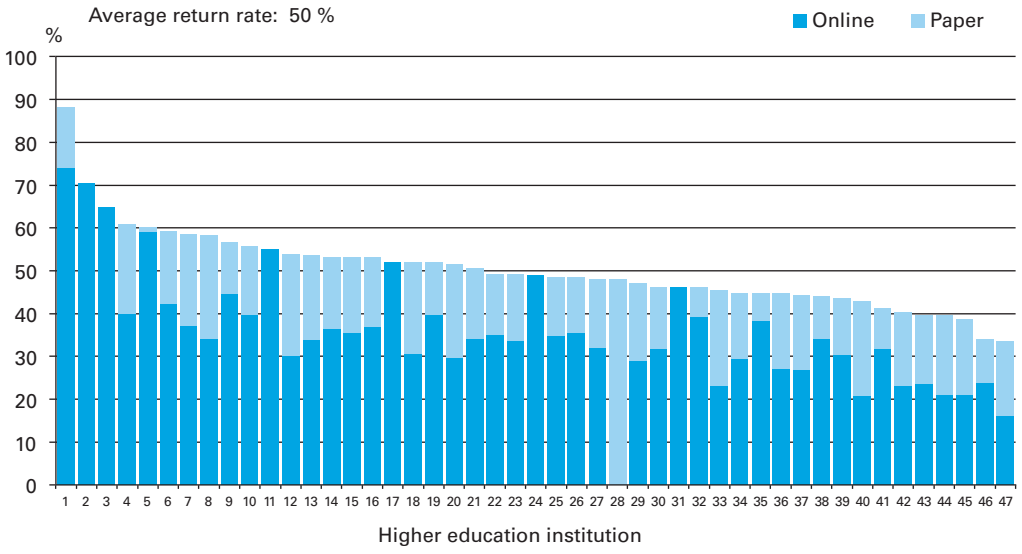
(c) no specialised staff for data entry necessary;

(d) the questionnaire can be tailored for different groups (with filters), and therefore could look shorter.

Some disadvantages should also be considered. Sometimes the drop-out rate (rate of non-completed questionnaire) seems to be high. In the case of paper questionnaires, respondents tend to send only completed questionnaires back, while filling in online questionnaires might be stopped at a certain question; the completed questions are already in the database when the respondent decides to stop filling in the questionnaire. Technical problems with internet access and the implementation of the software for the online survey (response time of the server) might also contribute to non-completion of questionnaires. In addition, the many browsers used (e.g. Firefox, Internet Explorer, Opera, Safari) and hardware (PC, notebook, tablet, smartphone) limits control of the way graduates receive the questionnaire.

Figure 7 provides the response rates from 47 different surveys of higher education institutions in the KOAB network which used more or less the same questionnaire and the same number of reminders. Most institutions used a combination of a paper questionnaire with an online questionnaire (software QTAFI), while some used only an online questionnaire. Most respondents preferred to answer the online questionnaire instead of the paper version and the response rate achieved by institutions of higher education which used only an online questionnaire did not fall.

Figure 7. Response rate of the KOAB survey 2009, by higher education institution and data collection method (%)



Source: INCHER-Kassel, KOAB graduate survey 2009; cohort 2007.

Recommendation 3: Data collection methods

Use standardised written questionnaires as a survey method (distributed by mail, e-mail or as an online questionnaire).

Justification

Written standardised questionnaires are the most common data collection method, because they are easier to handle and usually much cheaper than the other methods. Especially where online questionnaires can be used with invitation letters (and reminders) sent by e-mail, the costs for the survey are very low. Also, data entry and analysis requires less time and effort.

The questionnaires in Annexes 1 and 2 were designed for use in written surveys. It is also possible to deliver them via an interviewer and either to collect the completed questionnaire after a certain time or to be present when it is completed.

In either case, the questionnaires are not meant to be read aloud to the interviewee and should be completed by the interviewer.

Interviewers have to be trained appropriately, as they can have significant influence on the answers of the examined graduates.

3.6. Cross-sectional versus panel study

Most graduate surveys are cross-sectional studies: a population of graduates is questioned at one time point only, such as two years after graduation.

Panel or longitudinal studies, in which the same persons are questioned at different times, are rare.

Longitudinal studies are necessary to obtain information on individual change, through combining answers from individuals at different times. Assigning identification numbers on a first survey, supported by name and address, can help in collating the date for the same individual from later surveys.

Longitudinal studies are more complicated to conduct and also the statistical analysis of the data is more demanding. The typical research questions of tracer studies do not require a longitudinal study.

3.7. Other design elements

We can find other design elements of graduate surveys which might also be considered.

(a) **Regional level**

To conduct a tracer study in a country with big differences in the employment conditions and the study conditions and provisions at the institutions of education by region, a relatively high number of graduates are required to participate in the survey. Suppose we need a random sample of 1 000 graduates to obtain a representative sample for one country with no differences between regions. We would then need a sample of 4 x 1 000 = 4 000 in a country with four different regions to be able to control for the effect of region among all the other relevant factors.

(b) **Study programme**

For a representative random sample of graduates from one country it is not recommended that fields of study with a low number of graduates be deleted. Although the low numbers will not offer meaningful findings on a highly disaggregated level (such as field of study by institution of higher

education), these small fields must be integrated into the sample. If not, the sample for the whole country is no longer representative.

(c) **Type of institution**

The system of education in a country will determine which types are relevant. For international comparison we recommend the definitions of tertiary education in the regular OECD study *Education at a Glance* (http://www.oecd.org/edu/eag.htm).

(d) **Reputation/quality of the institution of education**

The reputation or the quality of the institutions of education included might be differentiated between high, medium and low and measured according to the number of lecturers with a certain degree. In some countries reputation rankings are available based on different surveys and are sometimes published by newspapers.

(e) **Type of degree**

A mixture of degree levels in an individual graduate survey is more difficult to handle. It offers the chance to compare the relevance of a second or higher degree, but many questions must be asked twice for the different study experiences. Also the age and the cohorts of the graduates are different, which affects the interpretation of the results.

(f) **Number of institutions of education**

(g) **Length of questionnaire**

Box 12. Example of the selection of a target population

If you want to assess the effect of a Master's degree in the year 2015 (year of the survey), which cohorts should be included in the survey?

1. Graduates of the year 2010 asked five years later, some of whom obtained a Master's degree in the meantime. With this design you control the cohort of first degree graduates, but the labour market situation at the time of job search might be different. Also, the duration of work experience for the two groups, graduates with and without a Master's degree will be different.
2. Graduates with a first degree received in the year 2013 and graduates who received their second degree in the same year (generation survey). With this design you control the labour market situation, but the age and the year of the first degree are different.

When the labour market changes rapidly, the second approach is recommended.

A comparison at the institutional level of aggregation (such as the average income of all graduates from one institution) is seldom meaningful for labour markets which are different for graduates by field of study and region.

As a minimum, the field of study should be controlled to compare graduates between institutions of higher education within the same field of study.

Considering the difficulties of conducting a tracer study and the necessary variables to obtain meaningful results, it is strongly recommended that a short questionnaire of one to three pages not be used. The unit costs of obtaining information from graduates are much higher for a short questionnaire than for a long one.

Experience suggests that a 10-20 page questionnaire does not dramatically reduce participation in a survey. The participation rate depends on several factors, of which the length of the questionnaire is only one element. It can be argued that a short questionnaire suggests very limited interest from the TVET/higher education institution in feedback from the graduates.

Recommendation 4: Length of the questionnaire

Use a questionnaire with about 12-16 pages.

Justification

A short questionnaire is of little use for institutional tracer studies which aim to contribute to improving study programmes. Practical conclusions based on indicators of employment outcomes from a tracer study need many factors to be considered. Many aspects of employment and work (not just employment status and salary) must be measured and related to educational factors as well as other individual and contextual factors.

3.8. Regular tracer studies

The objective should be to understand the evaluation/feedback as a permanent process, as the conditions/requirements of study courses are permanently changing. If tracer studies are implemented regularly, valuable time-oriented reference data are revealed.

Recommendation 5: Regularity of tracer studies

Tracer studies should be conducted regularly (i.e. every year).

Justification

Regular yearly institutional tracer studies allow comparison of the results over time. For example, it can be asked if improvement in the study conditions and provisions are also visible in employment outcomes.

Yearly tracer studies also allow the continuation of the learning process, as appropriately trained institution staff can improve their knowledge and skills without interruption.

If the number of graduates of some small study programmes is not enough for data analysis, the data of two or more surveys can be merged to obtain enough cases.

3.9. Requirements for institutional tracer studies

Resources necessary for a study start with a word processor and appropriate software. Microsoft Word, as a part of the Microsoft Office package, is the most commonly used and is the basis of examples of questionnaires, codebooks and reports in this guide: later versions of this software are usually less likely to crash with large or complicated formatted files such as questionnaires. Alternatives include the freeware OpenOffice.

The freeware programme QTAFI online (an open source project), written by Martin Guist, is good for an online survey.

See Table 2 for recommendations on the different activities. All tasks can be done with freeware: it is not necessary to buy software.

Table 2. Software requirements for a tracer study

Activity	Required kind of software	Recommendation
Proposal writing	Word processor	Microsoft Office Word or OpenOffice Writer
Questionnaire formatting and codebook writing	Word processor	Microsoft Office Word or OpenOffice Writer
Administration of questionnaires, controlling of returns	Database	Microsoft Office Excel/Access or OpenOffice Calc or MySQL
Data entry	Database	QTAFI and SPSS or QTAFI Online questionnaire or Microsoft Access XP database or ASCII file with editor or ReadSoft Eyes and Hands FORMS, automatic data capture with a scanner
Data analysis	Statistics package	QTAFI or SPSS or R or Stata
Charts	Chart software	Microsoft Excel or OpenOffice Draw or R or SPSS
Presentations	Presentation software	Microsoft PowerPoint or OpenOffice Impress
Report writing	Word processor	Microsoft Office Word or OpenOffice Writer

NB: QTAFI, questions, tables and figures: an open source project; for downloads and detailed information see http://www.qtafi.de/qtafi/index.php/qtafi

Besides the team leader, who should be an expert in TVET/higher education (subject matter related in the case of a tracer study for a specific field of study) and who should manage the whole study, the following competencies are required in the team:

(a) advanced knowledge and experience with appropriate word-processing software, especially with formatting (the concept of 'styles' should be well-known);

(b) advanced knowledge of, and experience with, SPSS (the use of SPSS syntax should be well-known), Stata or R;

(c) knowledge of basic statistical concepts such as mean, variance, covariance and correlation, analysis of variance and regression analysis.

3.10. Data analysis

The data analysis should be carried out using SPSS, a programme that includes all important methods of data analysis and data manipulation. It is probably the most widespread programme of this type, is user-friendly, very well documented (excellent handbooks are available), and relatively easy to use.

The QTAFI tool will produce some SPSS programs automatically, based on the codebook. It can produce ready-to-print tables reports more or less automatically (Schomburg, 2003).

You can use the online-questionnaire system QTAFI, which provides you not only with the automatic generation of user-friendly online questionnaires, but also with simple data analysis (frequencies, crosstabs and graphical result presentation).

3.11. Costs of a tracer study

The costs of a tracer study depend on many factors.

Institutional tracer studies usually do not include staff costs, only the extra costs for the invitations by mail and the printing of questionnaires (if any). If the invitation letter can be sent by e-mail and the questionnaire is available online, the costs are very low.

This section contains the basics of a cost calculation.

The following is a fictitious example of potential costs:

(a) 500 graduates are to be invited to participate;

(b) graduates will be invited by e-mail and/or mail;

(c) three send-outs are foreseen (two reminder actions);

(d) a response rate of 50% is expected (N=250);

(e) an online survey will be used.

Updating all addresses by phone seems to be rather cheap: only USD 200 is needed to obtain an updated database of 500 addresses.

If an online survey can be used, almost no other costs exist.

Table 3. Costs estimation for a tracer study for one TVET/higher education institution (target population = 500 graduates; expected return rate = 50%)

A. Updating addresses by phone				
Elements	**Basic costs (USD)**	**Minutes**	**Cases**	**Costs (USD)**
A.1 Phone call	0.05	4	500	100
A.2 Staff cost (student assistant)	0.03	6	500	100
A.3 Total				200
B. Staff costs (optional)				
	Costs per month (USD)	**Months**		**Costs (USD)**
B.1 Researcher	250	6		1 500
B.2 Administrative staff	125	6		750
B.3 Total				2 250
C. Other (optional)				
C.1 Computer				500
C.2 Phone, headset				20
C.3 Desk and chair				100
C.4 Total				620
D. Conducting the survey with paper questionnaires (three reminders) (optional)				
	Unit costs (USD)	**Unit**	**Cases**	**Costs (USD)**
D.1 Printing of questionnaires	0.20	Questionnaires	1 000	200
D.2 Paper, pencil, etc. (per month)	5.00	Months	12	60
D.3 Postage (three contacts)	0.20	Postage	1 500	300
D.4 Return postage	1.00	Postage	250	250
D.5 Reminder by phone call (500 cases per USD 0.20)	0.20	Phone calls	500	100
D.6 Data entry of paper questionnaires (50% return rate)	0.50	Questionnaires	250	125
D.7 Total				1 035
Total costs for a tracer study (A) (only e-mail contacts; only online survey; no costs for staff)				200

To obtain responses from 250 graduates, about USD 500 is needed for the material costs (A.3 + D.3), which is about USD 2 for the participating graduates or USD 1 per graduate of the target population (with an online questionnaire, address update by phone and mail contacts). These are costs for conducting the survey. Costs for researchers and administrative staff are not calculated.

3.12. Timing and major work tasks of a tracer study

In general, a tracer study can be completed within 12 months and requires three basic steps, each of four months:

(a) concept and instrument development; preparation of data collection;

(b) data collection with reminder actions;

(c) data analysis and report writing; dissemination activities; actions.

Table 4. Phases of a tracer study, major work tasks and duration

Phase	Major work tasks	Duration
1. Concept and instrument development	• definition of survey objectives (selection of themes to be investigated) • survey design (selection of the cohorts of graduates to be included; strategies for tracing the graduates) • technical concept for carrying out the survey • collection of addresses • updating of addresses • formulation of questions and of response items • formatting of questionnaires • pre-test of questionnaires • printing of questionnaires and other dispatch material	4 months
2. Data collection	• training of survey team • distribution and collection of questionnaires • assurance of high participation (reminder actions)	4 months
3. Data analysis and report writing	• definition of coding systems for the responses to open questions • coding of open responses • data entry and data editing (quality control) • data analysis • preparation of survey report • workshop with students, graduates and employers • further actions to improve the study/training programme	4 months

3.13. Design examples from different studies

The wide range of designs of tracer studies can be best demonstrated by the following descriptions of some studies:

(a) tracer study of the TVET graduates in Armenia;

(b) tracer studies of the University of Indonesia;

(c) graduate and employer survey of the Faculty of Engineering at the University of Dar es Salaam, Tanzania;

(d) KOAB network tracer studies in Germany;

(e) the Cheers study.

Table 5. Tracer study of TVET graduates in Armenia

Institution	Colleges and craftsmanship schools
Target population	451 graduates (cohort 2009 and 2010) out of the total population of 1 924 TVET graduates in Ararat and Kotayk
Regularity	One shot
Number of questions	50 questions
Number of variables	About 100 variables
Research institute	Caucasus Research Resource Centre (CRRC Armenia)
Funding institution	ETF
Data collection	Interviews
Number of respondents	451
Response rate	Not meaningful
Publications	ETF and CRRC (2012)

Table 6. Tracer studies of the University of Indonesia

Institution	University of Indonesia
Target population	All graduates (cohort 2008: about 5 300) who finished their studies two years ago
Funding institution	Own funds
Regularity	Every year since 2010
Number of questions	70 questions
Number of variables	300 variables
Field of study	All
Data collection	Online questionnaire (QTAFI software)
Number of respondents	About 2 500
Response rate	55%
Publications	Syafiq and Fikawati (2012)

Table 7. Graduate and employer survey of the Faculty of Engineering at the University of Dar es Salaam, Tanzania

Institution	University of Dar es Salaam
Target population	All graduates (about 1 300) who finished their studies between 1977 and 1988, and their respective employers
Number of questions	Graduate survey: 70 questions; employer survey: 30 questions
Number of variables	Graduate survey: 330 variables; employer survey: 170 variables
Field of study	Engineering (civil, mechanical, electrical as well as chemical and process engineering)
Data collection	Paper questionnaire. Due to the lack of a graduate directory, the only way to reach the Faculty of Engineering graduates was to contact organisations and companies most probably employing them. Based on lists of organisations (public and private), the questionnaires were distributed in person by staff members of the Faculty of Engineering to employers and graduates.
Number of respondents	653 graduates of the total of 1 300 could be contacted and 585 completed questionnaires were given back to the faculty Employers: of 1 100 potential employers, 283 were issued the questionnaires which finally resulted in 239 completed ones
Response rate	Graduates: 41%; employers: 22%
Major publication	Baldauf and Lwambuka (1993)

Table 8. The KOAB network tracer studies in Germany

Name of the study	Tracer study cooperation project (KOAB)
Target population	One cohort of graduates of institutions of higher education
	Panel: 1.5 years after graduation + 4.5 years after graduation
	All degrees (bachelor, diploma, master, doctorate)
Type of survey	Cross-sectional survey and panel survey
Regularity	Every year
Time of data collection	October–February
Data collection method	Standardised online and paper questionnaire with about 500 variables
Individual questionnaire	Every institution has its own questionnaire with institution-specific questions
Institution	40 to 60 institutions of higher education
Sample	All graduates of one cohort
Field of study	All
Countries	Germany and Austria (selected institutions)
Number of cases	About 200 000 graduates from the cohorts 2007 to 2012
Response rate	40 to 50%
Training	Every year 4–5 training workshops are organised for training of the tracer study team members of the institutions of higher education
Network approach	All key questions on the design of the survey and the questionnaires are decided by the network members (about 100 persons)
Funding	Mainly by the institutions of higher education; in the starting phase also some funds from the Ministry of Education
Major publications	Schomburg (2011b; 2012)

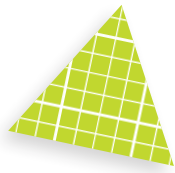


Table 9. International tracer study Cheers

Name of the study	Careers after Higher Education: a European Research Survey (Cheers)
Target population	1995 cohort of graduates of institutions of higher education
	At least a three-year study programme
	Graduates were asked three to four years after graduation
	Only first degree (bachelor, diploma, laurea)
	Representative survey at country level
Type of survey	Cross-sectional survey
Time of data collection	Summer 1999
Response rate	Different by country; on average about 40%
Number of cases	About 40 000 graduates (about 3 000 each from 12 countries) who had graduated between autumn 1994 and summer 1995
Institution	Many institutions in each country
Field of study	All
Countries	Austria, Czech Republic, Finland, France, Germany, Italy, Japan, the Netherlands, Norway, Spain, Sweden, the UK
Additional data	Interview surveys with graduates and employers: about 400 interviews with graduates and employers, selected topics of higher education and work Additional graduates included in some countries Additional cohort 8–10 years after graduation in two countries, Japan and the Netherlands
Funding	The studies in nine countries were funded by the EU (TSER) and three countries conducted parallel studies
Major publications	Schomburg and Teichler (2006); Teichler (2007)

Chapter 4. Questionnaire development

4.1. Overview

This chapter introduces the key issues of survey methodology related to the development of standardised questionnaires. Different kinds of questions are explained, as well as proposals for tracer studies:

(a) types of closed questions;

(b) open questions;

(c) number of scale points;

(d) sequence of questions;

(e) layout of the questionnaire;

(f) pre-test;

(g) covering letter.

4.2. Standardised questionnaire

The questionnaire used in tracer studies is usually highly standardised. The possible answers are already formulated and the respondents mostly select their answers from a list. Answering the question is mainly done by making a mark (or a click in an online questionnaire).

Table 10. Example of a standardised question

F5 – Are you permanently employed?	
1	☐ Yes
2	☐ No
3	☐ Not applicable, I am self-employed

In everyday life, we formulate open questions only because we directly communicate with our interlocutor and because we can ask again and again until we receive a satisfactory answer.

In a standardised survey, this is not possible. Only after the survey is finished do we receive responses from the interviewees and then we discover the way our question has been understood.

Annexes 1 and 2 show specimen questionnaires to consider as a basis for surveys. This chapter examines the design of the questionnaires and the regulations to be considered.

4.3. Adapting the specimen questionnaires

Adapting the specimen questionnaires is necessary in each survey: the questionnaires in the annexes cannot be used without reworking. Adapting is also necessary if you use other questionnaires as a basis.

Three crucial reasons to adapt are:

(a) adapting to individual objectives of the graduate survey

Each survey has its own objectives or, at least, emphasises certain questions. Depending on the objectives of the survey and the formulation of the questions it uses, it is necessary to complete or shorten some parts of the specimen questionnaires.

(b) adapting to national conditions

A specimen questionnaire can only anticipate special national features which may exist, for example, in the education and employment system, to a certain extent. Individual questions should consider the special conditions of the target country.

(c) adapting to special features of a field of study or study programme

A specimen questionnaire can only partly anticipate special features of a study programme which may exist in the graduates' subject area. Individual questions should consider the special conditions of your study programme.

4.4. Length of the questionnaire

The number of pages is an inadequate measurement of the length of a questionnaire as differences in layouts (typeface and size, line spacing) affect the count. The length of the questionnaire can be better measured by the time taken to fill in the questionnaire, though this depends on the individual graduate. Graduates might have different experiences during study and after graduation which affect the time for completion. For example, unemployed graduates are not asked to answer the question regarding employment but are filtered to questions relevant to them. Stated time needed to fill in the questionnaire is just an average, which might not be relevant for some groups of graduates.

It is often argued that a shorter questionnaire would result in a higher response rate. This seems not to be true if we compare surveys that use different lengths of questionnaire. Many factors influence the response rate and the length of the questionnaire is not as important, for example, as the number of reminders needed.

The specimen questionnaires cannot be considered either small or large. We estimate that the minimum questionnaire can be completed in 15–20 minutes on average.

We do not recommend reducing the number of pages, but making an effort to present the interviewee with a readable and clearly shaped text.

All elements of a questionnaire of the same type (such as questions, answer items, remarks) should be formatted in the same way.

Questions should be formatted differently from answers.

Table 11. Example of questions

F4 – How many hours do you work per week?	Q42
F5 – Are you permanently employed?	Q43

We propose a standardised format for the answer.

(a) The answers should be placed at the left side of a page; with this formatting the codes of the answer (e.g. 1) are placed close to the box, which should be marked and close to the text of the answer, e.g. yes.

(b) Only with this 'answers to the left' layout can you have a common layout for all the different questions in your questionnaire.

Table 12. Example of coded answers

F5 – Are you permanently employed?		**Q43**
1	☐ Yes	V43
2	☐ No	
3	☐ Not applicable, I am self-employed	

All scales should be presented in the same direction.

If, for example, you use five-point scales, with 1 = 'not at all' and 5 = 'to a very high extent', all your scales should be oriented like that.

Usually you should not use scales with different scale points: if you decide to use a five-point scale then all the scales in your questionnaire should be a five-point scale.

For more details about scales see Section 4.10 onwards.

4.5. Data entry requirements

Information included in the questionnaire relevant to the technical process of data entry depends on the method of data entry used:

(a) manual data entry using SPSS or other database (such as Microsoft Access); variable names are not required in the questionnaire, but the codes related to the answers (values);

(b) manual data entry using a spreadsheet such as Microsoft Excel; same as (a);

(c) manual data entry of ASCII data (with word processor or editor).

The fact that the questionnaires already contain the codes which have to be captured (figures which are related to the responses) and the columns (place/position on which the figures are captured) makes data processing much easier. If the questionnaires do not contain these technical details, the data entry is much more time consuming and incorrect.

4.6. Open questions

In everyday life, it is natural to ask questions and to receive answers. But it is not easy to write down these questions and the respective answers in such a way that we can assume they will be understood in the right way by respondents. The formulation of a new question to be included in the questionnaire takes a long time to ensure it is a 'good' question.

The use of an open question should be avoided when a closed question' can be formulated. We do not advise avoiding open questions completely – in the specimen questionnaires open questions are included as well – but open questions should be asked only where this cannot be avoided.

Table 13. Examples of an open question

F11 – What is your occupation/job title (e.g. primary school teacher)?	Q49
1	V49_TXT

If we want to analyse quantitatively the answers to an open question (e.g. What do you suggest should be improved in your TVET/higher education institution?), we have to code them. Coding requires the development of categories of answers under which different individual responses can be subsumed. Thus, for an open question you have to do the work that for a closed question is done by the interviewees themselves.

4.7. Closed questions

The formulation of a closed question requires the formulation of both the question and the possible responses. Only the open question does not contain any response items.

In the following, we use the expression 'question' in the sense of a closed question including response items. The range of proposed responses has to be complete, with all possible answers included.

Table 14. Examples of a closed question

F5 – Are you permanently employed?		Q43
1	☐ Yes	V43
2	☐ No	
3	☐ Not applicable, I am self-employed	

4.8. Variables, codes and values

All members of the survey team should have a basic understanding of terms fundamental to any survey research: variables, codes and values.

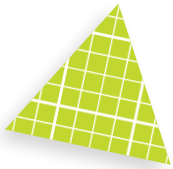


Table 15. Explanation of variables, values, codes and columns

Variables	Coded responses of the interviewees for a certain question **M1 – What is your gender?** 1 ☐ Male 2 ☐ Female Example: possible responses for the question M1 are 'Male' which is coded as 1 and 'Female' which is coded as 2. The variable 'gender' has the values 1 or 2.
Values/codes	Figures which are assigned to the categories of responses such as: 1 = Yes 2 = No 1 and 2 are the 'values' of the variable 'gender'. For detailed explanations concerning the rules of coding, see Chapter 8.
Columns	Place/position on a data carrier (punch card, text file) where the codes are captured. Example: (110) = card 1 column 10 No longer relevant, especially when you use an online questionnaire.

4.9. Answer scales and the level of measurement

Very important in the formulation of questions is knowledge of the consequences for later data analysis. Methodological literature usually distinguishes four types of question associated with different levels of measurement: categorical scale; ordinal scale; interval scale; metric scale.

The higher the level of measurement, the more statistical data analysis procedures can be used.

To allow powerful statistical analysis, use an ordinal scale instead of a categorical scale where possible.

4.10. Categorical or nominal scale question

In categorical or nominal scale answers, the codes or values related to the answers just indicate a difference from each other, but no ranking.

Table 16. Example for nominal or categorical level of measurement

M1 – What is your gender?
1 ☐ Male
2 ☐ Female

We measure the variable 'gender' with the help of a nominal scale of responses. In the social and other sciences measuring is carried out with the help of scales which can have a different level of measurement.

Box 13. Nominal or categorical level of measurement

- The codes only serve to differentiate the categories of responses.
- Any figures can be used as codes.
- The preceding example could also have used different figures for the categories of responses as codes. The value of the figures is not important for the later data analysis; it is only essential to represent the individual categories by different figures.
- Data analysis: mainly frequencies and crosstabs.

4.11. Open-ended question

Table 17 illustrates a question to find out whether the graduates started their job search before or after graduation. However, we have to consider that some graduates did not search for employment because they took up further studies, so the first three responses cannot be applied for this group of graduates and we have to create an additional category of responses (code 4). Further, we cannot exclude the possibility that some graduates do not exactly remember the start of the search for employment, so we should also give the possibility to answer 'I do not know'. Some graduates may insist that they started their job search neither before nor after but exactly at the time of graduation; others may like to date the beginning of their job search more precisely. All those possible responses are included in the category 'other', which enables the interviewees to describe their 'special case' within our categories. We do not have to create an individual category for every possible response.

Table 17. Example of a question with categorical responses (categorical or nominal scale)

1 – When did you start seeking a job? Exclude search for casual and vacation jobs		**Q43**
1	☐ More than one month before graduation	V43
2	☐ At the time of graduation (one month before or after)	
3	☐ More than one month after graduation	
4	☐ Not applicable, no job search	
5	☐ Other (please specify):	

Our closed question is now only a 'semi-closed' one and, while checking the questionnaire, we have to check whether the response registered in the category 'other' can be subsumed to any of the other existing categories.

The collective category 'other' is used if further responses are to be expected and cannot/will not be proposed in detail.

4.12. No answer

It is not common practice to explicitly give the response item 'no answer' in a questionnaire, but some interviewees, for various reasons, will not respond (see Section 8.9).

In the dataset each variable will contain a code for 'no answer'. It is recommended that such a code be used outside the common value range to make it easy to detect it in the data. Therefore, it is meaningful to use -9 always as the value/code for 'no answer'.

Use -9 as the code for 'no answer'.

4.13. Only one answer

The chosen example shows some of the problems of formulating questions in cases where we can expect the interviewees to give one statement only, in the respective category of responses. The individual categories of answers exclude one another.

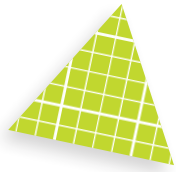
It is easier in cases where we can assume all interviewees are able to answer the question and where we can provide the whole range of possible answers.

4.14. Multiple answers

An important type of question is that to which interviewees can respond by ticking in a list of given items as many as they think are applicable.

Table 18. Example for multiple answers

E3 – How did you search for your first job after graduation? Multiple answers possible			Q31
1	☐	Replied to job ads/announcements (e.g. newspaper, internet, notice)	V31_1
2	☐	With the help of family contacts of parents, relatives	V31_2
3	☐	With help of personal contacts of friends, fellow students etc.	V31_3
4	☐	Speculative application – independent contact with employers	V31_4
5	☐	Through internships during my course of studies	V31_5
6	☐	Through internships after graduation	V31_6
7	☐	Through (side) jobs during study	V31_7
8	☐	Through (side) jobs during or after graduation	V31_8
9	☐	I was contacted by an employer	V31_9
10	☐	Job fair	V31_10
11	☐	Through the public job centre	V31_11
12	☐	Through private job agencies	V31_12
13	☐	Through internet (social) networks (e.g. Facebook)	V31_13
14	☐	Through the career centre of the TVET/higher education institution	V31_14
15	☐	Through teaching staff at the TVET/higher education institution	V31_15
16	☐	Not applicable, I have not searched for employment	V31_16
17	☐	Other (please specify):	V31_17 V31_17_TXT



Each response item constitutes one variable.

The scale of answers is not explicitly indicated, but we interpret a ticked item to mean 'yes' and the fact that no item has been ticked to mean 'no'. How to realise this in the data analysis will be explained later.

In the data file, the 'no answers' (not ticked items) are recoded to '2' = 'no'. If no items of the question are ticked we consider the whole question as 'no answers' which means that all individual items are recoded to '-9' = 'no answer'.

If multiple answers are possible, this has to be indicated in the question as 'multiple answers possible'; in the specimen questionnaires all questions allowing multiple answers have included this indication.

This kind of question is always used when a clear-cut scale of responses is meaningful. Someone could have 'contacted a public employment agency' or not.

In the questionnaires, no codes should be printed for multiple answer questions. For data capturing, a '1' will be entered for a ticked response.

4.15. Ordinal responses

In some questions, we ask the interviewee to provide a graded assessment of the response with the help of a five-point scale. In such cases, measurement is done with an ordinal scale level, i.e. a value in the scale is not only different from the others, but is also taking a higher or lower position than the others (rank order).

Figure 8. Example of an ordinal scale question

C2 – How would you rate the study conditions and provisions you experienced at the TVET institution?						**Q20**
Very bad				Very good		
1	2	3	4	5		
☐	☐	☐	☐	☐	Quality of classroom learning	V20_1
☐	☐	☐	☐	☐	Student recreational facilities on campus	V20_2
☐	☐	☐	☐	☐	Supply of learning materials (e.g. books, internet access)	V20_3
☐	☐	☐	☐	☐	Opportunity for consultation with teaching staff	V20_4

This example differs in various respects from the two preceding ones. The question 'how would you rate the …' only makes sense after adding the items or statements, for example 'quality of classroom learning'.

Moreover, the categories of responses are not completely verbalised, but only the beginning and the end of the scale: 1=very bad and 5=very good. Each item is a 'question' and a variable in the dataset.

Although the variables only have an ordinal level of measurement, and therefore all those arithmetical proceedings that assume the values have the same distance from one another (mean, variance) are suitable, it is common practice and even supplies plausible results in the data analysis not to follow this restriction stringently but to treat these variables as if they were metrical.

Such scales of response are used in cases where interviewees can be expected to give a graded assessment. In principle, the possible responses 'yes'-'no' or 'good'-'bad' could also be proposed, which are scales of answers too, but ones with only two pronounced characteristics.

4.16. How many scale points on an ordinal scale?

The smaller the number of characteristics in the scale of responses, the 'harder' the decision about the correct answer for the interviewees.

Graded responses are more useful when it can be assumed that there is no need for interviewees to give a strict yes/no response concerning, for example, their opinion about the usefulness of their studies.

When using scales with five possible responses, it is important that all scales are polarised the same way, for example the broadest consent with an item is always registered on the left hand side (value 1). Varying the degree of grading is rarely justified.

Do not use different kinds of scales within one survey.

Seven-point scales are used more often in US surveys but, on the whole, the use of five-point scales is predominant.

Five-point scales have the following advantages.

(a) A five-point scale is an uneven scale; only uneven scales can fit a normal curve which is statistical advantage over all even scales.

(b) A five-point scale approximates in many countries the use of school grades, which constitutes a kind of common metric. It depends on the country whether the scale should go from '1' = high/good/great extent to '5' = low/bad/not at all, or the reverse order.

(c) A five-point scale is more easy to interpret than a seven-point scale. Usually we will count the answers 1 and 2 (if the scale runs from 1 = 'very good' to 5 = 'very bad' and present the percentages of 'good').

4.17. Verbalising the scale points

Only the anchors of the scale should be verbalised because it is very difficult to find balanced verbalisation of the scale points between.

In Figure 9, examples 1 and 3 are correct; example 2 is incorrect because it seems to be difficult to understand the difference between 'fully agree' and 'agree' on the one side and between 'not at all agree' and 'not agree' on the other side. Also, the scale is not well balanced because 'partly agree' sounds more on the 'agree' side than the 'not agree' side.

Figure 9. Verbalising the scale points

1	Very good				Very bad	Right
	5	4	3	2	1	
	☐	☐	☐	☐	☐	
2	Fully agree	Agree	Partly agree	Not agree	Not at all agree	Wrong
	5	4	3	2	1	
	☐	☐	☐	☐	☐	
3	Fully agree				Not at all agree	Right
	5	4	3	2	1	
	☐	☐	☐	☐	☐	

Only the anchors of the scale should be verbalised.

4.18. Metrical level of measurement

Few interval-scaled variables are measured in social-sciences surveys: examples are income, age and period of job search.

Such data are best requested with the help of an open question and possibly classifying the responses in the data analysis (see Chapter 8).

Table 19. Example for metrical measurement

NU101/ME4 **M2 – In which year were you born?**	**Q82**
1 ☐☐☐☐ Year of birth	V82_NUM

4.19. Rules for formulating questions

Table 20. Rules for formulating questions

All questions have to fit into the context of the survey	The interviewee has to be able to understand why a certain question has been asked. Each question has to appear to be significant in the framework of the survey. From this rule, a strict criterion arises for all new candidates. Questions may seem to be interesting but when they do not fit into the framework of the survey they cannot be included.
The questions should be related to the object as concretely as possible	Poor: Have you already been searching for a job for a long time? Better: How long did you search for a job?
Try to avoid all valuation in the questions	Poor: Don't you think, too, that the workshop training should be abolished? Better: Do you think, too, that...?
Check all questions for their neutrality	The violation of the neutrality may already be revealed by only including 'positive' items in the item lists of the responses.
Each question and each item has to be definite	Check whether your questions/items contain any ambiguous enumerations. Poor: Should the department XY abolish the workshop training or the practical training in industry? Yes/No
Avoid abbreviations	
Use simple language and short sentences	Testing understanding of language is not the point of the survey.

4.20. Question sequence

The importance of the sequence of individual questions may, at first, be less evident than the rules for formulating them. Consider that each question has an effect on the following questions.

The first questions of a questionnaire are very significant as they show the interviewee what kind of questionnaire it is, and they also reveal how long it will take to complete. These first questions should be of the kind that can be answered quickly and easily.

It is assumed that the degree of attention/seriousness is lower at the beginning than it is in the 'middle'. This is also a reason for asking easy questions at the beginning. However, towards the end, tiredness might occur or even simply the wish to complete the questionnaire quickly.

Place simple questions at the end.

As far as possible, the questionnaire should be structured in topics which explain their context for the interviewee in addition to the individual questions. The structure of the topics in the graduate questionnaire should follow the biography of the graduates: study, transition, profession, further planning.

Within the different topics, the sequence of the questions also arises from the formal criterion of whether the questions should be answered by all graduates or only by certain groups of graduates. Filtering should be as easy as possible, so, at the beginning, questions should be asked which apply to all.

4.21. Questionnaire layout

In designing the layout, we wanted to make sure that it is possible to change the specimen questionnaires with the help of the standard equipment available in universities and to produce a finished copy ready for printing. With this aim, the formatting of the questionnaire uses only a few style sheets within Microsoft Word.

4.22. Covering letter

The covering letter can be printed on the cover of the questionnaire or on a separate sheet of paper that is included in the questionnaire.

We suggest using two different covering letters:

(a) a letter from the department or the TVET/higher education institution asking for participation in the survey;

(b) a letter from the head of the project that contains assurance of confidential treatment of the statements of the interviewees.

The covering letter should always contain:

(a) the description of the purpose of the survey;

(b) the use of the information/data;

(c) statements about data protection/privacy;

(d) the offer to inform the participant about the results of the survey;

(e) information about the implementing institution.

4.23. Testing

Even if you copy most of the questions from other questionnaires you should carry out a pre-test.

Test the questionnaire.

The test should come only after finishing the prototype of the questionnaire (final format, including layout). If possible, the questionnaire should be printed double-sided.

The test should aim to use respondents who will not participate in the main survey, such as those who only graduated recently or those who graduated quite some time ago. Selection of graduates at this stage does not aim to achieve representativeness for a defined population but to obtain a great variety of professional careers and of other individual characteristics; this should help show whether the questionnaire proves worthwhile for all graduates.

There is no prescription for how many graduates should be involved in the test.

Carry out the test as a quasi-interview.

It is of value to organise the test exercise as a kind of learning process, rather than trying to maximise the number of responses. A test that uses a written questionnaire will reveal only indirectly which questions caused difficulties; the reasons for uncompleted questions will not be explained at all. In a quasi-interview it is possible to watch the graduates completing the questionnaire and, if help is needed or is necessary, this offers a concrete indication of the need to improve the questionnaire.

Respondents can also be invited to the TVET institution for a classroom interview.

The test should pay special attention to the following questions.

(a) Are all questions answered? If not, why not?

(b) Are the filter indications definite and were they followed?

(c) Which questions are difficult to understand?

(d) How long does the process take?

Chapter 5.
Questionnaire modules for a tracer study

5.1. Overview

The content of a questionnaire depends, of course, on the specific objectives/research questions. This chapter offers proposals for questions which are very common in tracer studies.

Examples for the task of transforming the objectives of the survey into particular questions and into a range of possible answers are seen in the two options in Annexes 1 and 2:

- minimum version (50 questions, 170 variables);
- questionnaire modules (102 questions, 340 variables).

Both questionnaires have almost the same number of modules (15 or 16) but a different number of questions in each. The questionnaires can be used almost without change, but some adaptations are recommended.

5.2. Minimum version of a TVET/higher education tracer questionnaire

Table 21. Number of questions and variables of the TVET/higher education tracer study specimen questionnaires

Seq. number	Module number and title		Minimum questionnaire		Specimen modules	
			Questions	Variables	Questions	Variables
1	A	The course of studies at the xyz TVET institution	2	3	12	27
2	B	Internship and work experience during course of studies at the TVET institution	2	2	6	6
3	C	Evaluation of study conditions and study provisions at the TVET institution	2	22	6	58
4	D	Satisfaction with study	3	3	4	14
5	E	After graduation from the TVET institution	5	19	10	40
6	F	Employment and work	12	28	16	37
7	G	Work requirements	1	11	1	11
8	H	Relationship between study and employment	6	19	6	19
9	I	Work orientation and job satisfaction	3	32	4	49
10	J	Vocational education/training before study at the TVET institution	3	3	4	4
11	K	Further TVET or higher education after study at the TVET institution	2	5	7	17
12	L	Further vocational/professional training	2	12	4	14
13	M	Demographic information	2	2	4	6
14	N	Migration and regional mobility	2	4	6	11
15	O	Your comments and recommendations	3	3	7	11
Total			50	168		

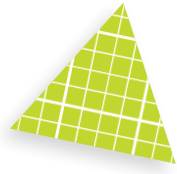


Table 22. Subjects of the minimum questionnaire

No	Question	Subject/topic
1	A4	Kind of qualification
2	A5	Name of the study programme
3	B1	Institution of higher education
4	B5	Employment during study
5	C2	Evaluation of the study conditions and provisions
6	C4	Evaluation of the study elements related to employment and work
7	D2	Satisfaction with the selection of the field of study
8	D3	Satisfaction with the selection of the TVET/higher education institution
9	D4	Satisfaction with the study in general
10	E1	Employment status after graduation
11	E2	Waiting time until start of first job after graduation
12	E4	Reasons for no job search
13	E6	Duration of job search (only graduates who searched for a job after graduation)
14	E7	Most successful method for finding the first job (only graduates who searched for a job after graduation)
15	F1	Employment status at the time of the survey
16	F3	Number of jobs since graduation
17	F4	Working hours per week
18	F5	Kind of employment contract
19	F8	Region of employment
20	F9	Type of employer
21	F10	Economic sector of employment
22	F11	Job title
23	F12	Main work duties
24	F13	Gross monthly income
25	F14	Kind of fringe/other benefit(s)
26	F15	Size of the company/firm/organisation
27	G1	Required competencies
28	H1	Utilisation of acquired knowledge and skills in the job
29	H2	Appropriateness of field of study for the job
30	H3	Match of job and qualification/degree level
31	H4	Appropriateness of position to study
32	H5	Reasons for not closely related job
33	H6	Evaluation of the usefulness of studies
34	I2	Characteristics of employment and work
35	I3	Planned job changes
36	I4	Job satisfaction

No	Question	Subject/topic
37	J1	Vocational training/post-secondary school courses before entering the TVET/higher education institution
38	J2	Kind of vocational training/post-secondary school courses before entering the TVET/higher education institution
39	J3	Employment before TVET/higher education education/training
40	K1	Further studies/training
41	K2	Subject(s) of further studies/training
42	L1	Further professional training after graduation
43	L2	Topics of further professional training received
44	M1	Gender
45	M2	Year of birth
46	N1	Country of birth
47	N5	Country of residence
48	O2	Disliked elements of study
49	O3	Recommended changes for the TVET/higher education institution/study programme

5.3. Module A: the course of studies at the TVET/higher education institution

This first module deals only with objective characteristics of the course of studies. This part will be answered quickly and easily and is supposed to induce the interviewees to remember their time as a student.

Table 23. Specimen questionnaire for Module A

Seq. number	Module number and title	Minimum questionnaire		Specimen modules	
		Questions	Variables	Questions	Variables
1	A The course of studies at the xyz TVET institution	2	3	12	27

Module A is to be answered by all interviewees and should be placed at the beginning.

The following objective information on the course is often required:

(a) period (year of start and year of end);

(b) major field of study;

(c) name of TVET/higher education institution;

(d) type of institution of higher education;

(e) kind of degree earned (diploma, bachelor);

(f) grade.

Table 24. Subjects of Module A

Seq.	Number	Subject/topic
1	A1	Name of the TVET/higher education institution
2	A2	Part-time study
3	A3	Date of graduation
4	A4	Kind of qualification
5	A5	Name of the study programme
6	A6	Duration of the study programme
7	A7	Reasons for selection of the TVET/higher education institution
8	A8	Financial support of the study
9	A9	Considered cancelling the study
10	A10	Reasons for considering cancelling the study
11	A11	Duration of attending courses (hours)
12	A12	Duration of study activities outside courses (hours)

To allow comparison with results of other surveys, the subject area should be recorded as accurately as possible and should only be summarised in the analysis. Subject areas which were relevant for the final degree should be requested, as the graduates could have started a further course of study or could have studied a different subject before. Use the ISCED codes on the lowest level for international comparison. See Volume 1 (Říhová, 2014) for more information on ISCED and other international classifications.

All responses should be available for this (main-break-variable), so it is important to check whether options can be surveyed if no statements are given.

Check whether the subjects can be summarised, especially if only a few case identification numbers are available.

Type of degree and degree level are indicators for the performance level of the graduates. To what extent are graduates who are more successful than others during their studies also more successful in seeking an occupation or in their job? Does the employment system reward performance or are there other criteria of importance?

The question on reasons for deciding to study at the TVET/higher education institution is directed to a time which, for some graduates, may be long ago. Therefore, this question should not be overvalued. It can even be dropped, especially if surveys of first-year students or student evaluations are available. It can also be dispensed with if there are no other institutions in a country offering comparable courses of studies. Not all conceivable reasons are given in the list of answers.

Special features of the institution or the course of studies should be considered and adaptation allowed of some of the response items or supplements.

5.4. Module B: internship and work experience during course of studies at the TVET/higher education institution

Table 25. Specimen questionnaire for Module B

Seq. number	Section number and title	Minimum questionnaire		Modules	
		Questions	Variables	Questions	Variables
2	B Internship and work experience during course of studies at the TVET/higher education institution	2	2	6	6

Table 26. Subjects of Module B

Seq.	Number	Subject/Topic
13	B1	TVET/higher education institution
14	B2	Number of mandatory internships
15	B3	Number of voluntary internships
16	B4	Duration of internships
17	B5	Employment during study
18	B6	Duration of employment during study

5.5. Module C: evaluation of study conditions and study provisions at the TVET/higher education institution

This part contains, in a condensed form, the main questions on the subjective evaluation of the course of studies. In the last part (Module O: comments) the same subject will be picked up again, but this time in an open form. This order has been chosen to keep the influence of the standardised questions on the open ones as low as possible. Also, it is to be expected that after mentioning the employment situation and especially the use of the qualifications acquired, the answers to open questions will be richer in content.

The content of the statements of the questions in this part is often misjudged. It is neither legitimate to play down assessments as 'only subjective' statements, nor right to call them 'objective'. It is of little interest to interpret the marginal distribution (how many respondents have a positive opinion of the structure of the studies?), but it is interesting to analyse and interpret the differences in the assessments of the groups (such as age groups, groups of subject areas).

A subjective assessment of the studies by the graduates will not really conclude, for example, that the institution's buildings are poor, but only that the graduates consider them poor. This question can also be put to students. This is the first question that asks the interviewees to specify their answer with the help of a five-grade scale. Therefore, this type of question is described in detail and it is made especially clear that an answer is required for each of the listed characteristics.

Table 27. Specimen questionnaire for Module C

Seq. number	Section number and title	Minimum questionnaire		Modules	
		Questions	Variables	Questions	Variables
3	C Evaluation of study conditions and study provisions at the TVET/higher education institution	2	22	6	58

Table 28. Subjects of Module C

Seq.	Number	Subject/topic
19	C1	Methods of teaching and learning
20	C2	Evaluation of the study conditions and provisions
21	C3	Evaluation of the advisory and guidance elements
22	C4	Evaluation of the study elements related to employment and work
23	C5	Existing connections/contacts with the TVET/higher education institutions
24	C6	Desired connections/contacts with the TVET/higher education institutions

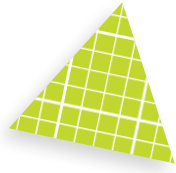
5.6. Module D: competencies and satisfaction with study

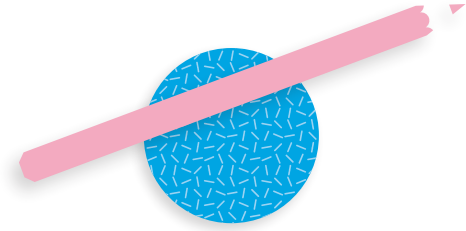
Table 29. Specimen questionnaire for Module D

Seq. number	Section number and title	Minimum questionnaire		Modules	
		Questions	Variables	Questions	Variables
4	D Satisfaction with study	3	3	4	14

Table 30. Subjects of Module D

Seq.	Number	Subject/Topic
25	D1	Acquired competencies at the time of graduation
26	D2	Satisfaction with the selection of the field of study
27	D3	Satisfaction with the selection of the TVET/higher education institution
28	D4	Satisfaction with the study in general





5.7. Module E: after graduation from the TVET/higher education institution

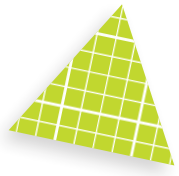
The focus here is the transition from studies to a profession. One question relates to the chronological structure of this process, the course of transition. The following questions refer to the strategies for seeking employment. These questions only refer to the first search for employment. Since, for different reasons, some graduates do not seek employment after finishing their studies, considerable attention has to be paid to correct filter guidance.

Table 31. Specimen questionnaire for Module E

Seq. number	Section number and title	Minimum questionnaire		Modules	
		Questions	Variables	Questions	Variables
5	E After graduation from the TVET/higher education institution	5	19	10	40

Table 32. Subjects of Module E

Seq.	Number	Subject/topic
29	E1	Employment status after graduation
30	E2	Waiting time until start of first job after graduation
31	E3	Job search methods for first job
32	E4	Reasons for no job search
33	E5	Timing of job search (only graduates who searched for a job after graduation)
34	E6	Duration of job search (only graduates who searched for a job after graduation)
35	E7	Most successful method for finding the first job (only graduates who searched for a job after graduation)
36	E8	Number of applications for employment (only graduates who searched for a job after graduation)
37	E9	Number of acknowledgements (only graduates who searched for a job after graduation and approached employers)
38	E10	Number of calls for interviews (only graduates who searched for a job after graduation and approached employers)



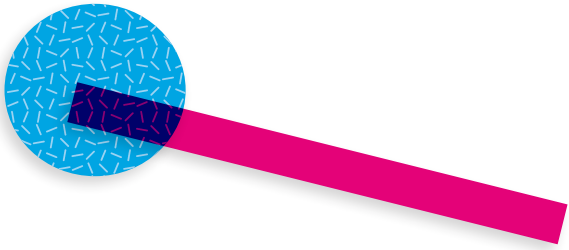
5.8. Module F: employment and work

Table 33. Specimen questionnaire for Module F

Seq. number	Section number and title	Minimum questionnaire		Modules	
		Questions	Variables	Questions	Variables
6	F Employment and work	12	28	16	37

Table 34. Subjects of Module F

Seq.	Number	Subject/topic
39	F1	Employment status at the time of the survey
40	F2	Aspects of international mobility
41	F3	Number of jobs since graduation
42	F4	Working hours per week
43	F5	Kind of employment contract
44	F6	Duration of search for current job
45	F7	Duration of work experience
46	F8	Region of employment
47	F9	Type of employer
48	F10	Economic sector of employment
49	F11	Job title
50	F12	Main work duties
51	F13	Gross monthly income
52	F14	Kind of fringe/other benefit(s)
53	F15	Size of the company/firm/organisation
54	F16	Geographical scope of the company/firm/organisation



This part investigates the main characteristics concerning the current employment situation of the graduates. Special importance has been attached to relevant information about the contents of the professional occupation/work to connect them with the course of studies. The professional/contextual relation between higher education and employment is also a topic of the following but on the basis of respondent self-perception, whereas this part investigates data which, when connected with respondent statements concerning their studies (especially the main professional focus of their study), permit statements to be made about the degree of matching between their professional occupation and the knowledge and abilities acquired during their studies.

In many countries, graduates have an extra job besides their main occupation. For this extra work they often earn more money than they do with their official job. It is not possible to analyse this extra work in more detail in graduate surveys, as it is generally not officially allowed.

This part also requires attention on correct filter guidance, as some graduates may not have been employed at all since completing their studies, or were perhaps unemployed at the time of the survey but employed before.

Questions concerning their employment situation should only be put to graduates who really are employed at the time of the survey.

In some studies, these questions are also asked of graduates who are unemployed at the time of the survey but had been employed before. This requires that the correct reference group is identified for all statements, such as 'from all graduates, who..., X% are employed in the public sector' instead of simply saying 'from all (employed) graduates, X% are working in the public sector'.

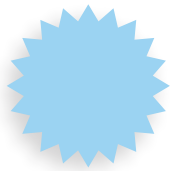
5.9. Module G: work requirements

Table 35. Specimen questionnaire for Module G

Seq. number	Section number and title	Minimum questionnaire		Modules	
		Questions	Variables	Questions	Variables
7	G Work requirements	1	11	1	11

Table 36. Subjects of Module G

Seq.	Number	Subject/topic
55	G1	Required competencies



This topic includes one question with 11 items.

The question concerns the self-perception of respondents, mainly regarding required non-professional competencies.

The execution of professional tasks requires not only the knowledge and abilities resulting from higher education but also 'non-professional' qualifications and orientations. The extent to which the TVET/higher education institution teaches these 'non-professional' qualifications and orientations will differ between cases. It is also not known how these competencies can be produced or how they were produced. Many (such as persistence, determination) might have existed at the time the course of studies was commenced. Others might have been specially supported during the course of studies (e.g. with economically effective thinking, ability to solve problems, innovativeness, self-confidence).

5.10. Module H: relationship between study and employment

The module 'relationship between study and employment' is very important for every tracer study. From this module the key indicators for match and mismatch of education and employment can be delivered. Respondents are asked to rate the extent to which they use their acquired knowledge and skills ('horizontal match') and how appropriate their job is to their level of education ('vertical match'). If graduates are not working in a job closely linked to their education they are asked for their reasons. All the questions in this module are subjective in the sense that the graduates are asked to evaluate their professional situation. Results of these subjective indicators of professional success should be analysed together with the objective indicators in Module F.

Table 37. Specimen questionnaire for Module H

Seq. number	Section number and title	Minimum questionnaire		Modules	
		Questions	Variables	Questions	Variables
8	H Relationship between study and employment	6	19	6	19

Table 38. Subjects of Module H

Seq.	Number	Subject/topic
56	H1	Utilisation of acquired knowledge and skills in the job
57	H2	Appropriateness of field of study for the job
58	H3	Match of job and qualification/degree level
59	H4	Appropriateness of position to study
60	H5	Reasons for not closely related job
61	H6	Evaluation of the usefulness of studies

5.11. Module I: work orientation and job satisfaction

Table 39. Specimen questionnaire for Module I

Seq. number	Section number and title	Minimum questionnaire		Modules	
		Questions	Variables	Questions	Variables
9	I Work orientation and job satisfaction	3	32	4	49

Table 40. Subjects of Module I

Seq.	Number	Subject/topic
62	I1	Work orientations
63	I2	Characteristics of employment and work
64	I3	Planned job changes
65	I4	Job satisfaction

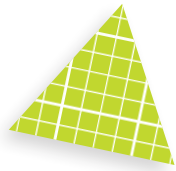
5.12. Module J: vocational education/ training before study at the TVET/ higher education institution

Table 41. Specimen questionnaire for Module J

Seq. number	Section number and title	Minimum questionnaire		Modules	
		Questions	Variables	Questions	Variables
10	J Vocational education/training before study at the TVET/higher education institution	3	3	4	4

Table 42. Subjects of Module J

Seq.	Number	Subject/topic
66	J1	Vocational training/post-secondary school courses before entering the TVET/higher education institution
67	J2	Kind of vocational training/post-secondary school courses before entering the TVET/higher education institution
68	J3	Employment before TVET/higher education/training
69	J4	Duration of employment before TVET/higher education/training



5.13. Module K: further education after study at the TVET/higher education institution

This part, and those following, does not pursue the individual biography. Other TVET/higher education or higher education could have been completed before the course of studies covered by this questionnaire.

This module is about the main objective characteristics of a further higher education and the reasons for it. Interpreting the results and the educational concept of the university requires consideration of the basic conditions for the specific profession in the respective country and the individual orientation of graduates.

In many ways, those graduates who completed other higher education are of interest: if they have completed a further course of study at a different university than the University of XY, they are equipped to make a basic comparison with their studies at the University of XY. In any case, they also ascribe professional success less directly to being an 'effect' of the course of studies at the University of XY than do the graduates who do not have any other higher education. It has to be considered that this group has less professional experience than other graduates and therefore their professional success, as far as it depends on the duration of the professional experience (such as promotion by merit), may initially be lower, even though they have more education.

Table 43. Specimen questionnaire for Module K

Seq. number	Section number and title	Minimum questionnaire		Modules	
		Questions	Variables	Questions	Variables
11	K Further TVET or higher education after study at the TVET/higher education institution	2	5	7	17

Table 44. Subjects of Module K

Seq.	Number	Subject/topic
70	K1	Further studies/training
71	K2	Subject(s) of further studies/training
72	K3	Institution of further studies/training
73	K4	Further studies/training
74	K5	Time of start of further studies
75	K6	Time of end of further studies
76	K7	Reasons for further studies

5.14. Module L: further vocational/ professional training

As with the questions on further higher education, the objective characteristics of further professional education will be highlighted. Both the educational concept of the TVET/higher education institution and the national basic conditions for graduate employment, plus individual orientations, have to be considered in interpreting the results.

The statements in this part also serve to provide important information about the need for further professional education which may also be addressed to the TVET/higher education institution.

This part also follows the logic of the individual biography by picking out the training period after graduation.

In particular, it interesting to find out to what extent and in what way graduates receive specific training/ education after graduation.

Interpretation of the results of this part depends largely on the educational aims of the individual TVET/higher education institution.

Table 45. Specimen questionnaire for Module L

Seq. number	Section number and title	Minimum questionnaire		Modules	
		Questions	Variables	Questions	Variables
12	L Further vocational/professional training	2	12	4	14

Table 46. Subjects of Module L

Seq.	Number	Subject/topic
77	L1	Further professional training after graduation
78	L2	Topics of further professional training received
79	L3	Subjects of further professional training received
80	L4	Desired topics of further professional training

5.15. Module M: demographic information

This part focuses on the main individual characteristics of the graduates, such as year of birth and gender. There are some far-reaching assumptions about differences between graduate groups and these biographical characteristics; these are investigated in many graduate studies.

In some studies, this subject is much more differentiated than is proposed here. In Annex 2 we have included further questions which allow greater depth.

We recommend that these questions be placed at the end of the questionnaire, as respondents may then understand more readily why these questions are asked. Also, they are easy to answer and this caters for any fatigue which may have developed in the course of the interview.

Some demographic variables can be found in almost all tracer studies.

Table 47. Specimen questionnaire for Module M

Seq. number	Section number and title	Minimum questionnaire		Modules	
		Questions	Variables	Questions	Variables
13	M Demographic information	2	2	4	6

Table 48. Subjects of Module M

Seq.	Number	Subject/Topic
81	M1	Gender
82	M2	Year of birth
83	M3	Highest level of education of father
84	M4	Highest level of education of mother

5.16. Module N: migration and regional mobility

Table 49. Specimen questionnaire for Module N

Seq. number	Section number and title	Minimum questionnaire		Modules	
		Questions	Variables	Questions	Variables
14	N Migration and regional mobility	2	4	6	11

Table 50. Subjects of Module N

Seq.	Number	Subject/Topic
85	N1	Country of birth
86	N2	Country of attending secondary education
87	N3	Kind of school
88	N4	Nationality
89	N5	Country of residence
90	N6	Region of residence

5.17. Module O: further comments and recommendations

Table 51. Specimen questionnaire for Module O

Seq. number	Section number and title	Minimum questionnaire		Modules	
		Questions	Variables	Questions	Variables
15	O Your comments and recommendations	3	3	7	11

Table 52. Subjects of Module O

Seq.	Number	Subject/topic
91	O1	Liked elements of study
92	O2	Disliked elements of study
93	O3	Recommended changes for the TVET/higher education institution/study programme
94	O4	Comments/suggestions regarding the survey
95	O5	Comments/suggestions regarding the questionnaire
96	O6	Time needed to fill in the questionnaire (minutes)
97	O7	Evaluation of the questionnaire

Chapter 6.
Preparation of the data collection phase

6.1. Overview

A tracer study cannot be done without a working team. Institutional tracer studies require the support of the management of the institution and collaboration with different departments.

The key element to be able to start the tracer study is an updated address database. In this chapter the necessary structure of the address database and the strategies for updating addresses are explained.

6.2. Management and organisation

At the start of the field phase the internal organisation of the tracer study team should be fixed.

Prepare a team with the following functions:

(a) project coordinator (contact person);

(b) team members (project management, IT, report writing, statistical analysis);

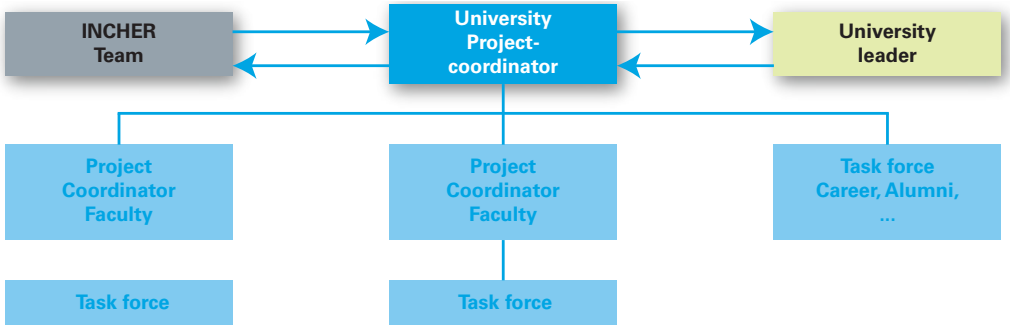
(c) external partners.

Provide function, name, address, phone number, e-mail.

This information should be published on the website of the tracer study and also in other information material such as the tracer study flyer.

Figure 10 depicts the KOAB organisation at university level, which could be an example for institutional tracer studies.

Figure 10. Organisation of the German KOAB tracer studies at university level



6.3. Before survey launch

Check if the address database is ready and how many valid e-mail addresses it contains.

The access codes (PINs) (as generated with QTAFI online) must be integrated into the address database. Every graduate in that database should have an individual access code (PIN) linking the address database with the survey database to send reminders (later) only to those who did not respond.

Write an invitation letter that includes the web address of the survey and the individual access code (PIN) (from the address database).

The mail should be personalised (Dear Mr Adam). Many mail-merge software solutions allow the sending of personalised letters including the individual PIN.

It is recommended that the invitation letter is signed by the leader of the department/school/university.

If the invitation letter is sent by conventional postal services it is useful to enclose a flyer with information about the survey (see the examples in Section 6.7).

6.4. Address database

The database should contain all information needed to contact the graduates. The starting point is the list of the names of all graduates belonging to the target population, for example, all who graduated in 2012.

The database should also contain process information, such as:

(a) if the address was updated;

(b) how the address was updated;

(c) where the address comes from;

(d) when each graduate was contacted first (date);

(e) how each graduate was contacted first (phone, e-mail).

This information is necessary to control (and also for report requirements) the whole process of sending questionnaires in several waves to the graduates.

Table 53. Recommended content of the address database

All personal information	• name, address, date of birth, etc.; • study address/home address; • e-mail; • phone; • course of studies, degree(s); • PIN (login code for the online survey).
Meta information on address and address updating and other actions	• address undeliverable; • address sent to registration office, etc.; • actual state (e.g. 'address was corrected, send now with corrected address'); • what to do next (e.g. 'new contact with first invitation letter'); • what was already done (e.g. 'address already corrected with Facebook').
Information on posting	• last contact (up to four contacts); • address used for the last contact (in separate fields); • date of first posting; • date of second posting; • date of third posting, etc.
Information on response	• kind of response (paper/online); • date of response; • willingness to participate in follow-up survey: yes/no.

Information for processes after the field phase:

(a) a graduate wants to have a results report (yes/no);

(b) a graduate who does not want to participate in other surveys in the future (yes/no);

(c) new address (such as e-mail address);

(d) other aspects (e.g. wishes to have contact with the alumni club of the university or the faculty).

Procuring addresses might be a very difficult and time-consuming task where it is not possible to obtain the current addresses from an updated register.

Several methods are available.

(a) Sometimes it is necessary to collect the address information from sub-units within an education institution (faculties or departments).

(b) If addresses are not stored electronically they must be entered manually.

(c) Use addresses of the parents of the graduates (registration records).

(d) Use the media: announce the survey on the internet, in newspapers, and on radio or TV and ask graduates to contact you.

(e) Use alumni associations, if available.

(f) Contact graduates via employers (e.g. schools and universities and other known employers of graduates).

(g) Use the snowball technique: ask graduates for addresses of other graduates.

See the experiences of the tracer studies initiated by the Association of African Universities (AAU) (Mugabushaka et al., 2007).

The addresses, where collected, might no longer be valid. The more time that has passed from graduation to survey, the more the validity of addresses is in question.

The University of Indonesia developed a very systematic and successful method to update the addresses of all their graduates.

(a) All graduates of the target population were called by students to announce the tracer study and to obtain a valid e-mail address.

(b) The updated e-mail addresses were used in the field phase and resulted in an high response rate of more than 50%.

The use of snowball sampling is particularly appropriate in tracer studies. This involves initial contact with some graduates who are asked to provide addresses of their friends who also graduated with them. Facebook and other social networks can assist in this process.

6.5. Tracer study web page

A web page should be provided for the tracer study to:

(a) present the project to the graduates;

(b) clarify questions;

(c) direct graduates to the questionnaire (link to the online questionnaire).

The address of the web page should be short and simple.

Other functions of the web page:

(a) presentation of the tracer study to the staff and students of the TVET/higher education institution;

(b) presentation of the tracer study to external parties (parents, other institutions, government, mass media);

(c) presentation of the results (when available).

The contents of the web page should be as follows.

(a) What are the objectives of the tracer study?

(b) Who is involved?

(c) Who is handling it?

(d) How does the survey data flow?

(e) Who is using the data?

(f) How is the data protection done?

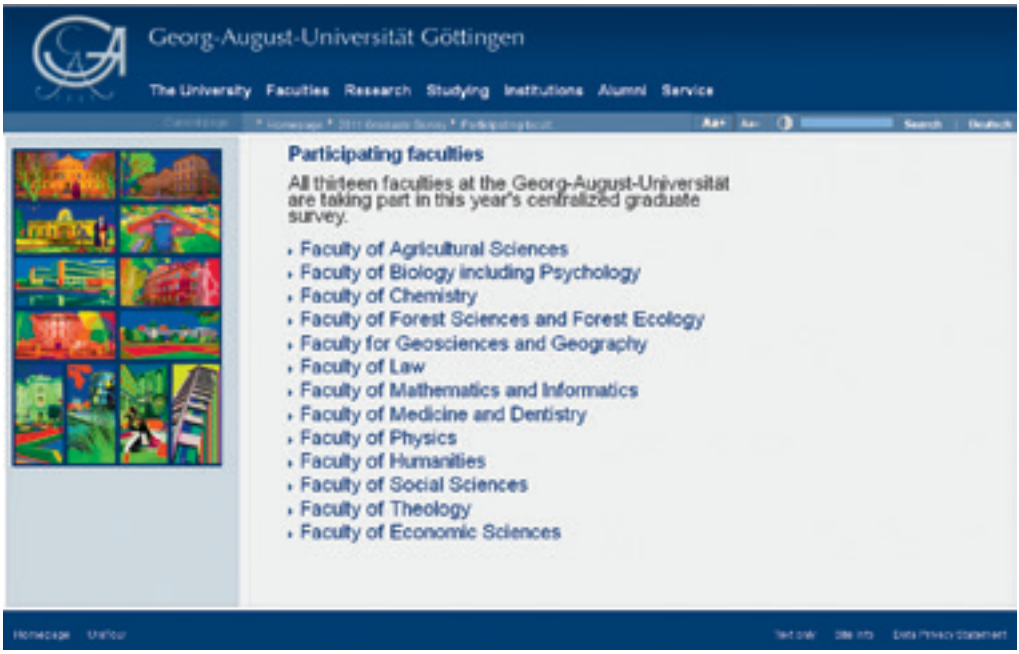
(g) What happens in the project? Is the survey finished? When are results available?

6.6. Examples of tracer study web pages

Figure 11. Tracer study web page of the University of Göttingen: invitation letter of the president of the university

Figure 12. Tracer study web page of the University of Göttingen: information about the participating faculties

Figure 13. Tracer study web page of the University of Göttingen: participating faculties



http://www.uni-goettingen.de/Absolventenbefragung

Figure 14. TVET Vietnam tracer study

http://www.tvet-vietnam.org/en/article/270.vietnamese-german-cooperation-in-tvet-tracer-study-a-successfully-piloted-initiative?sstr+tracer

6.7. Flyer with survey information

If a flyer is used, the key information of the tracer study should be presented to:

(a) graduates;

(b) students;

(c) staff of the TVET/higher education institution;

(d) mass media;

(e) other stakeholders.

This wide audience will determine the number of copies required. Distribution to current students will advise them that they will be invited in the future to participate in the tracer study.

The flyer should give information on:

(a) background of the study;

(b) objectives of the tracer study;

(c) methods (kind of questionnaire);

(d) schedule;

(e) cooperation (if any);

(f) publications (if any);

(g) tracer study team;

(h) contacting the tracer study team.

Figure 15. Example of a flyer from the VALERA tracer study

6.8. Checklist for data collection

The following items could form a part of a checklist.

(a) Collect information about the target population (number of graduates by study programme and gender; per cent and number).

(b) Create tables about the target population.

(c) Qualification/degree of graduates of 2012 of the TVET/higher education institution, by gender (per cent and number).

(d) Collect the addresses of the target population.

(e) Are addresses of all members of the target population available? If not, what are the reasons?

(f) Are all addresses updated? If not, how many are updated? How was the updating done?

(g) Ensure technical implementation of address management is done and tested (how to do mail merge, how to print labels).

(h) Create the text for all invitation letters to graduates, including the signature(s).

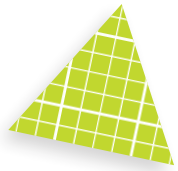
(i) Should incentives be used?

(j) Prepare the project homepage with the link to the online survey.

(k) Provide further information materials (flyers, additional letter from other important people, such as the vice chancellor).

(l) Relevant people (careers service, alumni service) are informed.

(m) Ensure staff (student assistants) are available.



Chapter 7.
Activities during the data collection phase

7.1. Overview

To be able to improve the data collection in the future it is important to document this phase, preferably daily.

In this phase the data entry and the statistical analysis can start. This includes a first check of the incoming questionnaires and preparation of data entry and analysis. The development of a codebook is an essential step in this phase, as explained in this chapter.

7.2. Documentation of the field phase

All activities during the field phase should be documented in such a way that it can be easily included in the methodology chapter of the final report.

7.3. Daily activities for handling paper questionnaires

A clear step-by-step guide should be followed for handling paper questionnaires. The following uses a guide prepared for the KOAB tracer studies to give some indications about the different tasks.

(a) Collect the questionnaires from the institution post office every day.

(b) Bundle the questionnaires from that day.

(c) Write on the top of the bundle the date (return date). This date should later be entered in the questionnaire data file.

(d) Count the number of returned questionnaires and enter this number in an Excel sheet (for the return statistics).

(e) Open the envelope of one returned questionnaire.

(f) Check the questionnaire: is it answered? Only questionnaires which are answered to a specified extent (at least the parts A + B + C + D + E) should be counted as returned questionnaires.

(g) A label with the simple identification (sequence) number (such as 001 … 399) should be put on the upper right side of the cover page of the questionnaire. The first questionnaire is given the number '001' and so on. This ordering system is the most easy and efficient, and allows later retrieval of the questionnaire very easily. Using labels for numbering helps to avoid double numbering, which often happens if the numbers are written manually (handwritten). All labels required should be printed before the start of the field phase; where graduates provide addresses, a copy of the label should also be put on the slip with the address.

(h) The fact that a graduate has sent back a questionnaire together with the date of return should be entered in the address databank. If the questionnaire is sent back without name and address the name cannot be used as a link between address database and questionnaire. Experience shows that the best way is to send a PIN (personal identification number) with the invitation letter which can also be used to enter the online questionnaire (login code) (see Figure 16).

(i) If the graduate entered their name and address on a slip at the end of the questionnaire, the slip has to be removed from the questionnaire to protect privacy. Personal data, such as name and address, should never be stored together with the data/ answers from the questionnaire, otherwise the answers are no longer The slips with labels should immediately be stored in a safe (locked) place, which has no open access. Personal data should never be stored on a computer connected to the internet.

(j) Aggregated numbers should be entered in the Excel sheet (response statistics).

(k) The first 10 days after the sending of an invitation letter are the most interesting. Return statistics for the tracer study team should be produced every day, and discussed in the team meeting.

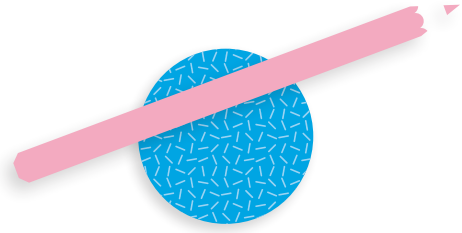


Figure 16. Text element for the cover page of the paper questionnaire

We have prepared two versions of this questionnaire for you to choose from: an online version and this paper version.

If you want to fill in the paper questionnaire, please enter the PIN code from the invitation letter in the box below so that we can delete it from the online survey.

☐☐☐☐☐☐

7.4. Response statistics

Gross response rate

The gross response rate is the proportion of graduates from the target population who participated in the survey, regardless of:

(a) whether an address existed;

(b) whether the existing address(es) was/were valid;

(c) whether a valid address could be found.

Table 54. Example for calculation of the gross response rate

Total number of graduates	1 000
Number of respondents	500
Gross response rate	**50%**

The gross response rate informs us about the success of the survey better than response rates adjusted for the problems of address quality.

Net response rate

For the calculation of a net response rate we need to know how many valid addresses we have (number of graduates who actually received an invitation to participate).

Table 55. Example for calculation of the net response rate

Total number of graduates	1 000
Number of respondents (returned questionnaires)	500
Number of addresses	900
Number of undelivered questionnaires	55
Total number of valid addresses	845
Net response rate	**59%**

Table 56. Example of response rate for the XYZ tracer study

Total number of graduates of the year 2013	1 000
Total number of addresses from graduates of the year 2013	900
Undeliverable questionnaires	55
Number of persons reached/adjusted population	845
Responses (returned questionnaires)	500
Gross response rate	**50%**
Net response rate	**59%**

Table 57. Example of response statistics

Returned questionnaires: tracer study of the TVET/higher education institution 2014							
Number of graduates:			1 000				
Number of updated (valid) e-mail addresses:			800				
Days	**Date**	**Number of returned questionnaires**	**Cumulative number of questionnaires**	**Cumulative gross return rate (%)**	**Cumulative net return rate (%)**	**Remarks**	**Number of invitations**
1	01.10.2014	40	40	4	5		800
2	02.10.2014	50	90	9	11		
3	03.10.2014	20	110	11	14		
4	04.10.2014	15	125	13	16		
5	05.10.2014	11	136	14	17		
6	06.10.2014	12	148	15	19		
7	07.10.2014	8	156	16	20		
8	08.10.2014	4	160	16	20		
9	09.10.2014	5	165	17	21		
10	10.10.2014	3	168	17	21		
11	11.10.2014	2	170	17	21		
12	12.10.2014	0	170	17	21		
13	13.10.2014	1	171	17	21		
14	14.10.2014	2	173	17	22		
15	15.10.2014	0	173	17	22		
16	16.10.2014	30	203	20	25	First reminder	627

17	17.10.2014	25	228	23	29		
18	18.10.2014	15	243	24	30		
19	19.10.2014	12	255	26	32		
20	20.10.2014	10	265	27	33		
21	21.10.2014	8	273	27	34		
22	22.10.2014	5	278	28	35		
23	23.10.2014	7	285	29	36		
24	24.10.2014	3	288	29	36		
25	25.10.2014	2	290	29	36		
26	26.10.2014	1	291	29	36		
27	27.10.2014	2	293	29	37		
28	28.10.2014	1	294	29	37		
29	29.10.2014	0	294	29	37		
30	30.10.2014	1	295	30	37		
31	31.10.2014	0	295	30	37		
32	01.11.2014	20	315	32	39	Second reminder	505
33	02.11.2014	20	335	34	42		
34	03.11.2014	12	347	35	43		
35	04.11.2014	10	357	36	45		
36	05.11.2014	8	365	37	46		
37	06.11.2014	7	372	37	47		
38	07.11.2014	5	377	38	47		
39	08.11.2014	8	385	39	48		
40	09.11.2014	5	390	39	49		
41	10.11.2014	2	392	39	49		
42	11.11.2014	3	395	40	49		
43	12.11.2014	1	396	40	50		
44	13.11.2014	2	398	40	50		
45	14.11.2014	0	398	40	50		
46	15.11.2014	1	399	40	50	End of field phase	

Figure 17. Example of returned questionnaires by date (number)

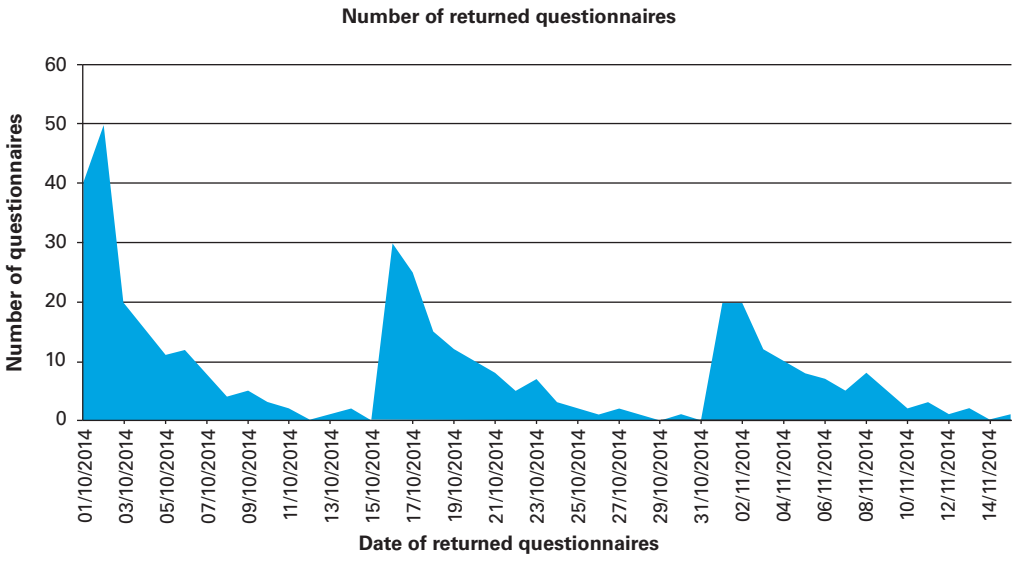


Figure 18. Example of returned questionnaires by date (cumulative number)

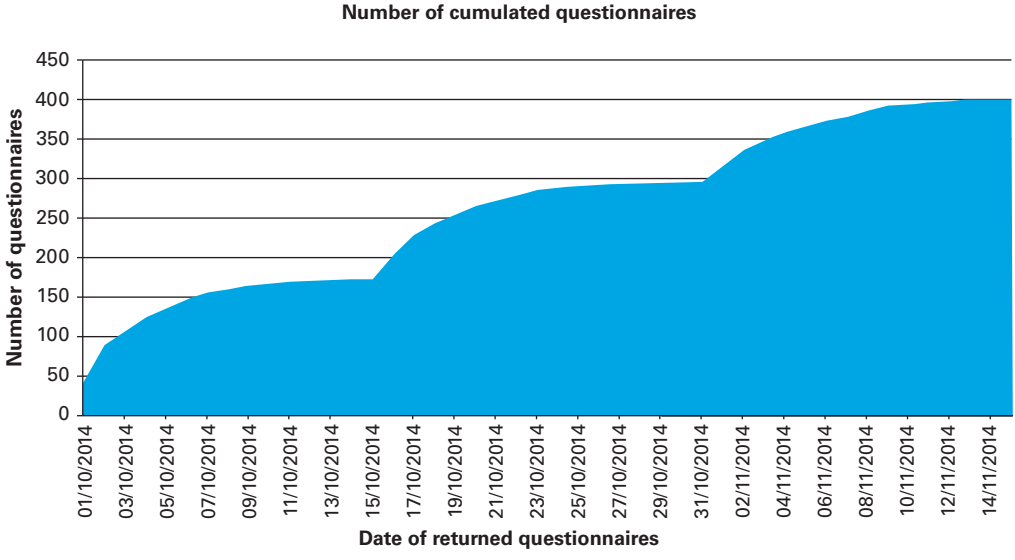
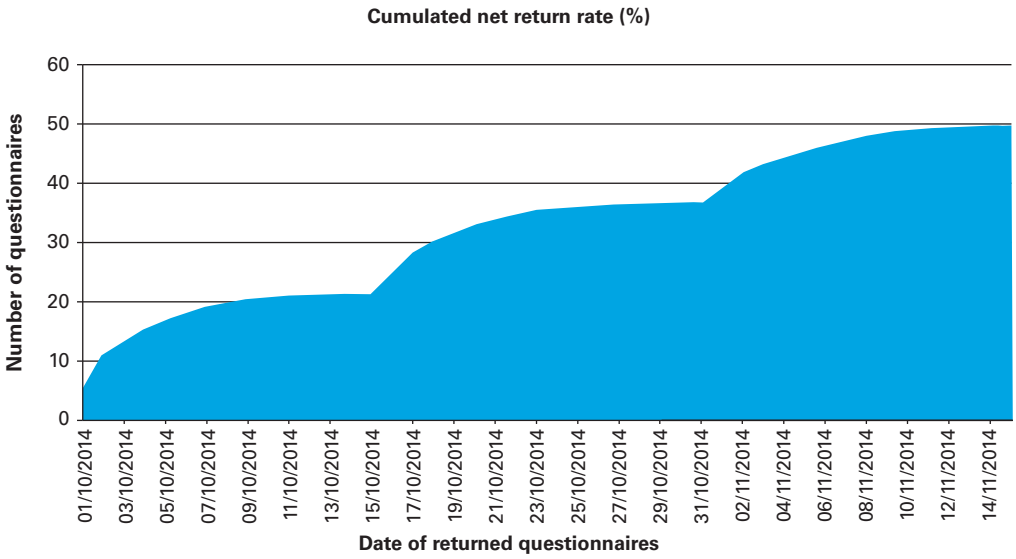


Figure 19. Net return rate by date (cumulative %)



7.5. Control of returned questionnaires

Checking the returned questionnaires can partly be understood as a preparatory step for the data entry.

We recommend not only collecting the returned questionnaires, but alsochecking them with regard to the following five criteria.

(a) target group

Has the questionnaire been completed by a member of the target group? This check is especially important as it is easily possible that the addresses received are not the ones actually wanted. This period of the survey implementation offers the opportunity to correct these mistakes. Questionnaires which were not completed by members of the target group are left out of the survey (no data entry) but they are counted for the proportion of returns.

(b) completeness

Some questionnaires may not be completed properly without being given a good reason for this (such as unemployment). These questionnaires are generally left out of the survey, too, but are counted for the proportion of returns.

(c) seriousness

It is not easy to describe how to check whether the completion of the questionnaire has been done seriously. With the responses and the long list of items for the question with a five-point scale, for example, lack of seriousness may be supposed if a plausible pattern for the ticked responses cannot be seen. This check can be very time consuming if it is done systematically and it is difficult to understand why respondents should bother purposely to give foolish answers. Therefore, we recommend only an initial check for signs of lack of seriousness at first. However, during the process of data analysis it is possible to do this kind of check more systematically.

(d) clarity and consistency of answers

This is the most time-consuming step in checking the questionnaires. It can happen that respondents do not keep to the rules given in the questionnaire:

(i) even though they are asked to tick one item only, you will find two items being marked;
(ii) some interviewees may tick 'other' without ticking the corresponding box;
(iii) for a five-point scale, you may find two ticks in one line or a tick between two boxes.

In all these cases it is necessary to correct the statements of the interviewees to enable data entry to be carried out.

(e) open numerical answers

Leading zeros do not necessarily have to be filled in, but during the check, attention has to be paid to the fact that all statements can be captured correctly. All the numbers with more than two figures (such as income or number of employees) have to be checked to see that they are captured correctly.

7.6. Reminder actions

Reminder actions are the most powerful measures to increase response rate. Experience from many tracer studies recommends that at least two reminder actions should be undertaken.

If the addresses are updated before the start of the field phase, mail-out then should proceed as in Figure 20. Incoming questionnaires should be processed as described:

(a) daily collection of paper questionnaires and/or download of online questionnaires;

(b) daily response statistics (Excel sheet);

(c) daily update of the address database;

(d) first check of the questionnaire (filled in?);

(e) coding of open answers possible;

(f) data entry of paper questionnaires.

If the addresses are not updated before the start of the field phase, the process becomes much more complicated. If updating is done in combination with the first mail-out, those addresses which have been updated (such as by snowball technique) do not have the status of 'first invitation'. It is recommended that all updated addresses be stapled until the next date for a mail-out. The whole process of the field phase should then be prolonged by 14 days. If the process of updating addresses continues, further prolongation is necessary because all graduates should receive the same number of invitations.

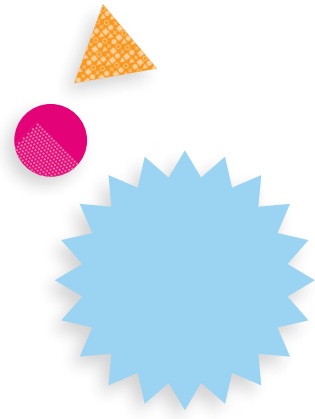
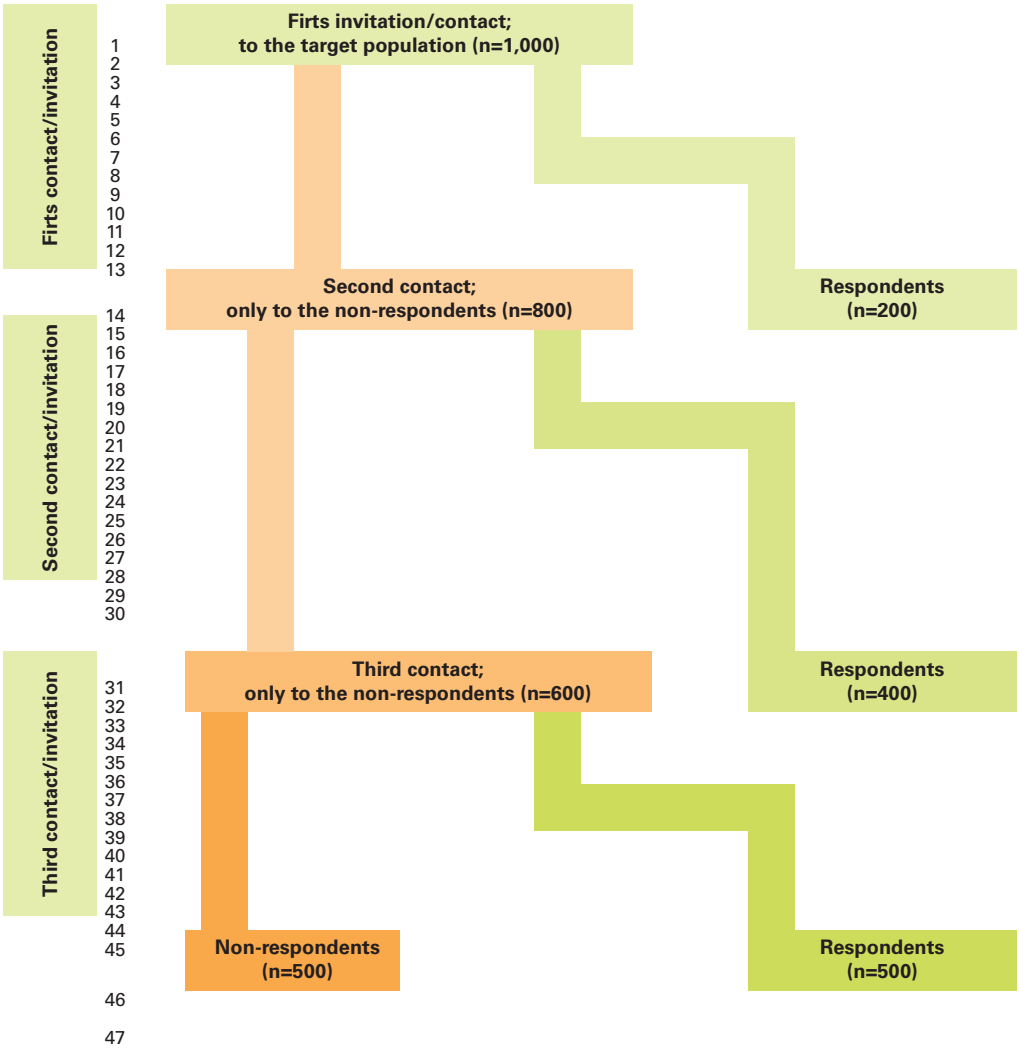
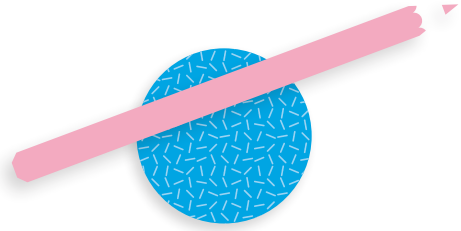


Figure 20. Schedule of invitations/contacts





7.7. Helpdesk

During data collection, graduates might have questions regarding the tracer study in general or specifics of the questionnaire. Technical problems might occur if an online survey is used.

A helpdesk is needed and the contact details should be given to the graduates:

(a) in the invitation letter;

(b) in the flyer about the tracer study;

(c) in the paper questionnaire;

(d) in the online questionnaire.

The helpdesk is intended to provide respondents with information and guidance, and should also provide support in solving technical problems (troubleshooting), for example in case of damaged paper questionnaires or access problems to the online questionnaire.

7.8. Daily backup/download of online data

Backup of the online questionnaire system should be done every day. The installation of the questionnaire and the database with responses should be downloaded from the server of the tracer study and stored on the local computer.

Backups should also be done regularly on another medium (USB stick) and stored in a safe place separate from the computer room.

7.9. Data entry of paper questionnaires

The data entry of paper questionnaires can start during the field phase.

7.10. Measures for obtaining a high participation rate

The success of the survey process is mainly measured by the number of returns: the smaller the number of graduates who refuse to complete the questionnaire, the higher the proportion of returns.

A high proportion of returns is very important when the actual number of graduates questioned is low.

For written graduate surveys, the proportion of returns is mostly between 30 and 60%; for employer surveys it is nearly always much lower.

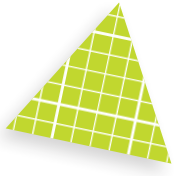
In a written survey, the proportion of returns can be increased by sending reminders. Send a second reminder with another questionnaire and a stamped return envelope about four to five weeks after the first dispatch to those graduates who have not responded by then.

A complete postal survey cycle including three dispatch actions takes at least two months, regardless of the number of people approached. With interviews, the duration of the process depends very much on the local/regional conditions, so no general timing indications can be given.

7.11. Training of survey staff

Where other people are involved in the implementation of the survey, it is necessary to organise a training course for them. The form and content of the training course depend on the kind of participation of such people.

For postal questionnaire dispatch, only the appropriate technical indications concerning the dispatch action are required.



For personal delivery of the questionnaire (interviews), all staff members must be very well informed about the study and know the questionnaire perfectly. The interviewer will often be asked to explain the objectives of the study and to give explanations and help in responding to individual questions. Interviewers can influence the results of the study, and while such influence cannot be avoided, it has to be an objective of the training to control this influence. All staff members must have the same knowledge of the study and follow the same rules when doing the interview.

A one-day training course for all those interested in participating in the implementation of the survey should suffice. Information on the objectives of the study and the questionnaire should be distributed to trainees in advance.

If other people take part in implementing the survey, make sure they are well trained.

7.12. The codebook

When the data collection is in progress, preparations for data entry and coding can begin.

This task requires an instruction manual called the'codebook'. Even if entering your data directly with Excel or SPSS (in a kind of spreadsheet) or if someone else is doing the job, a codebook must be prepared. There are no formal requirements for a codebook apart except that anybody who reads it should be able to understand how the information given in the questionnaire is transferred into the data file ([7]).

A codebook provides information on the structure, contents and layout of a data file.

While codebooks vary widely in the quality and amount of information given, a typical codebook includes:

(a) response codes for each variable;

(b) codes used to indicate non-response and missing data;

(c) exact formulation of questions and answers;

(d) skip patterns (filters) used in a survey;

(e) other indications of the content and characteristics of each variable.

Codebooks may also contain:

(a) frequencies of response;

(b) survey objectives;

(a) concept definitions;

(b) a description of the survey design and methodology;

(c) a copy of the survey questionnaire;

(d) information on data collection, data processing and data quality.

7.13. Recommendations and rules for coding and data cleaning

Code lists

As a general rule, code in as much detail as possible. Later the data can be aggregated at a higher level. The national statistics agency or the relevant institution can provide rules to transform the national codes into international codes, such as for job titles, economic branch or field of study.

[7] For a clarification of the general concept of a 'codebook' see ICPSR, Inter-university Consortium for Political and Social Research: Find & Analyse Data: *what is a codebook*: http://www.icpsr.umich.edu/icpsrweb/ICPSR/support/faqs/2006/01/What-is-codebook [accessed 8.10.2014].

For example, if it is said that the code for 'field of study' has two digits, then two digits are the highest possible aggregation; it is strongly recommended that the national codes are more differentiated.

The code lists should be included in the codebook, or a reference has to be given.

Missing values

We propose to use the following values for missing values. They are all outside the normal value range.

(a) -1 = 'question not asked'

(b) -2 = 'drop-out'

(c) -3 = 'outside the plausible value range'

(d) -8 = 'filtered (not applicable)'

(e) -9 = 'no answer'

Scales

When more than one box is ticked, and the ticked ones are neighbours, then take the more extreme one, for example if '1' and '2' have been ticked, take '1'.

In all other cases, enter the mean value, for example if '4' and '2' are ticked, enter '3'.

Imputations

Blanks and missing entries should be imputed as far as possible. The imputations should be documented well. But do not impute blanks with '0'.

Multiple answers

Only ticks should be coded, with a '1'.

After data entry, if at least one item of a list of items was ticked, the ones not ticked will be recoded into '-2' ('No'). If no item at all is ticked, the blanks will be recoded into '-9' ('Missing').

Figure 21. General rules for checking the questionnaires

	Rule	Example
1	All corrections and remarks are to be done with a **red pencil** (or with a pencil in another contrasting colour, if the questionnaire is filled in with a red one).	
2	Deletions are to be done by two parallel slashes.	
3	On the front page of the questionnaire an abbreviation of the name of the person having checked the questionnaire has to be stated	
4	In the case of scales: if two values are ticked, one has to be deleted. As a rule, the more extreme value counts.	e.g. on a scale of 5 the 1 and 2 are ticked = 1 is the valid value
5	Entries have to be done on the check sheet.	e.g. 'Answer to question 5 is unclear'
6	Replies under the category 'other' have to be classified under the given categories, if possible.	
7	Unclear figures/numbers have to approximate. All figures have to be controlled (e.g. question 25) and, if necessary, must be corrected.	e.g. 2–3 persons becomes 3 persons – figures are to be approximated

Chapter 8.
Data analysis

8.1. Overview

This chapter deals with the different types of problems connected with quantitative data analysis. Data entry and control are prerequisites of the statistical data analysis (in the narrow sense of meaning: the data analysis). The data analysis is a very important step in the tracer study; without it, the objectives of the tracer study cannot be achieved.

Even if the data analysis is done by experts (such as from university statistical departments) it is recommended that the following chapter tbe read in order to be able to appraise the results of the processes.

This chapter also provides some basics of qualitative data analysis (see Sections 8.4–8.6).

8.2. Data analysis software

SPSS

SPSS is the most used and best documented software for statistical data analysis. It is easy to learn. For education institutions special offers are available with relative low prices (IBM SPSS Statistics with the C Tables and Tables modules). For the tracer studies we recommend using SPSS or R.

Excel

Carrying out data analysis with Excel is not recommended, but some analysis can be done with it. A handbook is available which introduces the use of Excel for the data management and analysis of a tracer study (Ehlert and Kluve, 2011). The Swiss organisation Helvetas developed an Excel-based toolkit for tracer studies which is free of charge and can be downloaded.

STATA

STATA, like SPSS, is used widely in the social sciences. It has similar statistical functions, but it is much cheaper.

R

R is very powerful open source software which allows all the necessary data analysis of the tracer study to be done without any costs ([8]).

8.3. Data entry for paper questionnaires

Before beginning data entry, it is necessary to decide how to handle open questions requiring text answers such as job title, and suggestions for improvements.

The following are possible solutions.

(a) Capture all responses to open questions ('text file') and code them. Then capture all numerical data (for the open and closed questions) ('raw data').

(b) Capture all responses to closed questions ('raw data1') and then all responses to open questions ('text file'). After having coded the open responses, capture the new numerical data ('raw data2').

(c) As in the previous paragraph, capture all responses to closed questions ('raw data') and then the responses to open questions ('text file') without coding them.

Data entry can be assigned to professionals, but the study team, who can contribute substantially to the quality of the data, should take part in data control. Data analysis could also be done by professionals, but it is imperative to have fundamental knowledge to understand and interpret the results of the statistical analysis.

We especially recommend drawing up an extensive table volume. This will offer the ability to insert selected tables directly into the final report.

This manual does not offer a detailed introduction to the procedures and problems of data analysis. Depending on the extent of survey team involvement in this, it may be necessary to consult the SPSS manual.

[8] A great deal of information about R is available on the internet, for example: *The R project for statistical computing*: http://www.r-project.org/ [accessed 8.10.2014].

8.4. Coding

Nearly all questions in the graduate questionnaire include response items which already are coded, i.e. codes (figures) are assigned to each of them. For the later data analysis they can be entered directly.

ASCII/ text data entry

For this data entry type, columns should indicate (for each question, respective to each response item) the position on the card where the codes have to be entered.

Up until a few years ago, punch cards (containing exactly 80 columns) were mainly used as data carriers; nowadays magnetic tapes or diskettes are used for data entry and do not limit the number of columns. However, there are still many reasons why data entry, even on modern data carriers, should be done according to the principle used for punch cards:

(a) even on screens, a maximum of 80 characters can be shown side by side (columns);

(b) code sheets become unwieldy if they contain more than 80 columns.

Coding of open questions

However, for some questions response items are not given and for others there are possible supplementary response items (such as 'other').

Quantitative analysis presupposes that figures have to be assigned to the responses by established rules (which have to be included/have to be recognisable in the codebook). The assignment of figures to answers is called coding.

The codes (figures which have to be captured) may be entered either in the questionnaire (in the margin) or on a separate sheet (the so-called code leaf or code sheet). However, for data entry it also has to be indicated, in which column (and on which card) data entry is carried out or in which 'field' of a data bank the information has to be entered.

The aim is to achieve a situation in which the results of the data analysis – for example, the tables produced – contain not only the 'bare figures' but also a description of the figures. The codebook enables this kind of 're-translation' and is therefore a main aid during data analysis.

In the data analysis we regard the responses of the interviewees as values of variables. By using the name of the variable included in the codebook we refer to individual questions or response items.

We recommend creating names for variables by a simple scheme which will have considerable advantages for data control and further data management.

8.5. Rules for names of questions and variables

All variable names of the same survey should begin with a letter and contain an indication of the question (ID) and the item; for example, the variable 'group work' from question C1 below may have the name V19_1 (Variable 19, item 1).

It is recommended for technical reasons that the question number ('C1'), which refers to the section of the questionnaire, and a question sequence number ('Q19') be used.

The number 'C1' makes it easy to find the question in the questionnaire. The ID number 'Q19' allows reidentification of the same question, which might be placed in different places in questionnaires of different TVET/higher education institutions or in different surveys of the same institution.

We propose including the variable names and the identification number of the question as per the questionnaire, as can be seen below. For questionnaire printing, the variable names are formatted to be 'hidden', not printed/visible but still in the questionnaire. This means the questionnaire already has the most important information of a codebook.

NU023/ OR	**C1 – To what extent were the following aspects of teaching and learning stressed in your studies?**						Question ID Q19
	Not at all				To a very high extent		
	1	2	3	4	5		Variable name
1	☐	☐	☐	☐	☐	Group work	V19_1
2	☐	☐	☐	☐	☐	E-learning	V19_2
3	☐	☐	☐	☐	☐	Lectures	V19_3
4	☐	☐	☐	☐	☐	Internships and practical training	V19_4
5	☐	☐	☐	☐	☐	Practical knowledge	V19_5
6	☐	☐	☐	☐	☐	Theories and paradigms	V19_6
7	☐	☐	☐	☐	☐	Project- and/or problem-oriented learning	V19_7
8	☐	☐	☐	☐	☐	Written work	V19_8
9	☐	☐	☐	☐	☐	Oral presentations by students	V19_9
10	☐	☐	☐	☐	☐	Self-study activities	V19_10
11	☐	☐	☐	☐	☐	Teaching staff as main source of information	V19_11
12	☐	☐	☐	☐	☐	Evaluation of courses by students	V19_12
13	☐	☐	☐	☐	☐	Choice of courses by students	V19_13
14	☐	☐	☐	☐	☐	Respectful communication between teachers and students	V19_14
15	☐	☐	☐	☐	☐	Enhancement of student motivation	V19_15
16	☐	☐	☐	☐	☐	Enhancement of student self-learning abilities	V19_16

Subject: Methods of teaching and learning; page number online; filter online.

8.6. Coding of open responses

The coding of open responses can be done without special software, though it needs the development of the code list.

Development of response categories/code list

It is important to look for so-called head-categories, under which several individual responses can be subsumed. The meaning of such statements can be presumed to be the same even when different expressions are used. However, for the coding process, criteria for the similarity should be given in the codebook. This is mostly done by indicating examples.

For some variables it is recommended that an existing standardised list of categories be used, for example, job title/occupation (ISCO), economic sector (ISIC), region (NUTS) ([9]).

Box 14. ISCO: International standard classification of occupations

ISCO: *Welcome to the ISCO website*: http://www.ilo.org/public/english/bureau/stat/isco/

Latest version: ISCO-08 (approved in 2008); see http://www.ilo.org/public/english/bureau/stat/isco/isco08/index.htm

Box 15. ISIC: International standard industrial classification of all economic activities (United Nations: New York, 2008)

The international standard industrial classification of all economic activities, ISIC (United Nations), is recommended for use in coding the economic sector. A manual is available from the web (United Nations, 2008). See also the statistical classification of economic activities in the European Community (NACE; latest version NACE Rev. 2, adopted in 2008) which is more detailed on lower levels of aggregation (European Commission, 2008).

See also the explanation of NACE from Eurostat: Glossary: http://epp.eurostat.ec.europa.eu/statistics_explained/index.php/Glossary:Statistical_classification_of_economic_activities_in_the_European_Community_%28NACE%29 [accessed 8.10.2014].

Box 16. NUTS: Nomenclature of territorial units for statistics

NUTS is a system for dividing up the economic territory of the EU.

See the explanations of the NUTS classification on the Eurostat website: http://epp.eurostat.ec.europa.eu/portal/page/portal/nuts_nomenclature/introduction

[8] For more details on the use of standard classification see also Volume 1 (Chapter 4). The overview of international classifications of the United Nations is http://unstats.un.org/unsd/class/

Text entry of all open responses

Responses to a particular question (called 'texts' in the following) are copied out in such a way that it is possible to separate and sort the texts of the individual interviewees on different questions. Therefore, the number of the question and the case number (ID of the graduate) have to be noted as well as the actual text of the answer.

Sorting is very important since in the next step – the forming of categories of responses – it is necessary to obtain a complete overview of all answers concerning one particular question; all other answers of the individual interviewees, as a rule, are not important.

(a) It is useful to determine abbreviations before starting to enter the text (such as 'eng.' instead of 'engineer').

(b) Spelling mistakes may be corrected as only the meaning is important.

To sort the answers, a column for the case number and the question number should be captured together with the text.

Figure 22. Example for text data entry

ID	Question number	Code	Text
001	12		Response
001	15		Response
001	16		Response
002	15		Response
002	16		Response
003	15		Response
003	16		Response

Should all responses be coded?

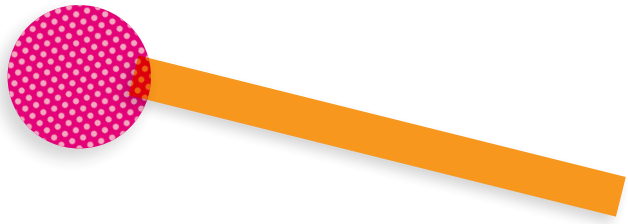
If only a few interviewees answered open questions it is not worthwhile to plan a quantitative data analysis, but the responses should still be captured as texts and, for the formulation of the examination report, they should be taken into consideration.

As a rough rule, if responses are received from more than 5% of the interviewees, they should be coded.

8.7. Numerical data entry

Data entry includes copying the codes from the questionnaire onto a suitable data carrier (which nowadays will probably be the hard disc of your computer).

Data capture can be affected by mistakes, but contrary to 'normal' text, data mistakes are not easily found (see data control) as the sequence of the figures entered is different in each questionnaire.



This is why data capture professionals do not use a normal word-processing programme but a special data programme which, for example, checks plausibility while entering numerical values.

The error rate can be reduced considerably by capturing the data twice; first, all questionnaires are captured normally and afterwards all questionnaires are captured again (in the same sequence), but in the second stage only the correspondence with the first entry has to be detected and, if necessary, data have to be corrected. While it increases costs to do data capturing this way, in the following phase of data correction, costs will be saved.

The control of the captured data (raw data and text of responses) has to be continued until the data reach a sufficient quality. However, it is neither meaningful nor feasible to strive for completely perfect data: the costs of removing every single mistake are far too high. Data control has the function of excluding all systematic errors and of determining the degree of errors made accidentally.

If the data capturing is done by professionals, first a random selection of about 10–30 questionnaires should be captured and then this capturing should be checked very carefully. In practice, the captured data should be compared with the entry in the questionnaire: one person reads the captured codes (including 'blanks') and a second person checks these codes with the ones entered in the questionnaire.

All differences should be noted down, the different kinds of errors should be analysed and the proportion of errors calculated. The results of the data control should be reported back to the professionals. In general, an error level of 2–3% is still acceptable (excluding systematic errors). If the data capture has been done without many mistakes, it is possible to move on to data analysis.

First, however, it is necessary to define the data both for the later statistical analysis and for the second phase of the data control.

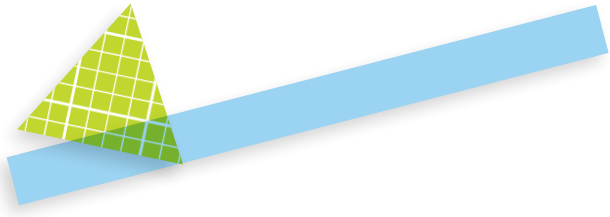
8.8. Data definition with SPSS

To analyse the data with the help of SPSS requires a few instructions to inform the program about the structure of the data (see appendix).

Instructions concerning the data definition (variable labels, value labels) are optional, but improve the reading of the analysis prints.

The style of instructions should be as follows.

- Nearly all instructions can be abbreviated. Mostly, the first three characters of an instruction are sufficient to enable SPSS to interpret them correctly; for example, it is sufficient to write VAR LAB instead of writing variable labels. It is not necessary to write the abbreviations in capital letters: 'Var Lab' is correct, too.
- SPSS recognises a point (.) as the end of an instruction. Instructions may extend over many lines (see Var Lab instructions).



Box 17. SPSS syntax: labels and missing values

Variable labels

Description of the name of a variable.

120 characters at the most (most SPSS procedures only print the first 40 characters). With regard to the text, the variable labels correspond to the response items of the questionnaire; only if those are too long do they have to be shortened correspondingly.

Variable label V81 'gender'

Value labels

Description of the values of the variable.

60 characters at the most (most SPSS procedures only print the first 20 characters).

Value labels V81
1 'male'
2 'female'
-9 'no answer'

Missing values

Some values of a variable are assigned the status 'missing'.
These values are not considered for statistical analysis of this variable.

Missing value V81
(-9)

8.9. Missing values

When the missing values instruction is used, the data are not changed but the data analysis program receives notice that the data analysis should not take into account those cases showing values defined as missing.

The term 'missing values' is not particularly appropriate, as these values are not really missing from the data record. This is not allowed to happen, as SPSS only processes files of a rectangular form.

When should the values be defined as missing values?

It will often happen that individual questions are not answered by the interviewees without any cause being noticeable for this ('missing at random'). In some of the questions it will happen that certain groups of interviewees are excluded from replying (the item 'not applicable'). A systematic reason makes it impossible for these persons to answer the question; for example, questions asking for motives for having changed employers can only be answered by those who have

actually done this. For data capturing you can explicitly provide a code for 'not applicable' (such as code -7).

If in data capture (actual) missing responses were explicitly coded, it is necessary to inform the data analysis program by using the 'missing values' instruction. For example, the value '9' has to be understood as a missing value ('missing' = user-defined missing values).

If in data capture (actual) missing responses have not been explicitly coded ('blanks' in the data record), at first it is useful to change (with the help of RECODE varname (SYSMIS='-9')) the coding of the missing values (SYSMIS = system-defined missing values; represented as point in print-outs), done by the SPSS program as standard. Then the data analysis program can be informed by the 'missing value' instruction that, for example, the value '-9' has to be understood as a missing value.

It is very important for the data analysis to deal carefully with the 'missing values', and it is necessary to decide for each individual question in what way missing responses are to be interpreted.

8.9.1. Proposal for missing values

We propose the following for missing values; they are all outside the normal value range.

(a) -1 = 'question not asked'

(b) -2 = 'drop-out'

(c) -3 = 'outside the plausible value range'

(d) -8 = 'filtered (not applicable)'

(e) -9 = 'no answer'

8.10. Data modification

In data analysis it is often necessary to change the values of existing variables (for example, to combine values, with the help of 'recode') or to create new variables (with the help of 'compute', 'count' or 'if'). See the SPSS syntax in Annexes 4 and 5.

8.11. Simple data analysis: frequencies

The first step in the actual data analysis is to carry out simple frequency counts and aggregate statistics (such as arithmetic mean) of all variables. This is also very important for data control.

The advantage of the 'descriptives' procedure lies in the compact form of the print-outs as the statistical descriptives together with the name of the variable and the label are shown in one line.

In data control, however, the statistical descriptives have no interest value: the print-out of the 'frequencies' procedure is merely needed for checking each individual variable to ascertain whether its values seem to be plausible. For fault location, two cases have to be distinguished.

(a) Are the values within a permissible field of values? If, for example, the possible responses lie only between 1 and 5 in the field of values, the value 6 is inadmissible; this is a 'wild code' that proves that errors have been made in data capture.

(b) Are the values plausible when considering further statements of the same interviewee? If an interviewee indicates, for example, that he has not yet found employment, he should not give any further statements concerning the methods of finding employment.

Frequency counts indicate whether there are any errors within the data. To determinate the error, and possibly correct it, it is necessary to find out the case in which the error occurs.

The procedure 'list' permits examination of the values of variables in individual cases.

8.12. Data correction with syntax

To be able to correct the data, it is necessary to return to the questionnaires.

The correction of data can:

(a) be done directly in the raw data (not recommended);

(b) be implemented in the system file with the help of 'data entry' (the raw data remain faulty, but here, too, it is important to work very carefully not to produce any other errors);

(c) also be affected by using 'if' instructions in the system file (the raw data remain faulty but the correction of the errors stays transparent and can be checked at any time).

> Use SPSS syntax for data corrections. This is the only way to document this important change in data.

8.13. Further statistical analysis

The simple frequency countings ('frequencies'), statistical descriptives ('descriptives') and the table volume containing a breakdown of the results for important survey groups (such as gender, field of study) provide answers to most survey questions.

Volume 1 (Chapter 4) provides some suggestions on indicators of skills demand, supply and mismatch which can be computed using different data sources, including tracer studies. In most cases they build on simple statistics such as frequencies, crosstabs and descriptives.

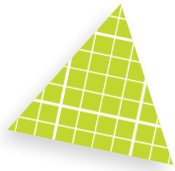
For some of the questions the data analysis strategies shown are not really satisfactory.

(a) For individual questions, for example, it is interesting to analyse responses by further differentiating characteristics (gender, study performance, origin, professional education).

(b) It may be interesting, for example, to look at the responses to some questions where specific characteristics were not actually asked for but resulted from the combination of individual characteristics.

(c) If differences were noticed in main questions, for example subject area, year of graduation and field of employment, it is important to enquire about those that are more crucial. This is not possible by only comparing percentage values or means, but needs special procedures. As connections may also exist between the subject area and the field of employment, multivariate analysis strategies are advisable (e.g. SPSS procedures Anova or Regression).

(d) It is not an analysis of effectiveness simply to describe the differences between groups or the relations between variables. To find out to what extent the further professional career of graduates is influenced by their studies and by the study conditions, more in-depth analysis is necessary, the description of which would be beyond the scope of this guide.



Chapter 9.
Presentation of results

9.1. Overview

The possibilities of results of tracer studies being of practial use depend on the reports style. The more results that are available for the public, the more useful the tracer study for the different stakeholders:

(a) potential students and their parents;

(b) current students;

(c) teachers;

(d) managers of the education institutions;

(e) fresh graduates;

(f) employers;

(g) government;

(h) researchers.

Decisions on practical consequences of the results should be based on a thorough interpretation of the findings, with consideration of the quality of the data as well as other possible interpretations. The data analysis can help to test some of the possible interpretations.

9.2. Key challenges of interpretation

Institutional tracer studies usually aim to get empirical data which can be used for practical improvements within the institution. However, practical lessons can only be drawn from the results of a study if the data are of sufficient quality. Without published documentation of the methodological quality of the study, which allows critical discussion, the proposed improvements can always be rejected with methodological arguments.

9.2.1. High quality of the survey is needed

Many tracer studies in the TVET as well as in the higher education sector are low quality and their usefulness is also low. It is not possible to reach meaningful conclusions on improvements to study/training if the empirical base ('the empirical evidence') is weak.

Key problems of data quality are:

(a) reliability and validity of the data are not tested;

(b) biased sample;

(c) representativity not tested;

(d) low response rate;

(e) low address quality/addresses are not valid.

Reports from tracer studies seldom contain sufficient information about key methodological issues. The following methodological issues should be always reported:

(a) sampling;

(b) address quality;

(c) number and kind of contacts with graduates;

(d) response behaviour and representativity;

(e) data quality, kind of data manipulation and analysis.

If this information is not provided, the quality of the data remains doubtful.

9.2.2. Sometimes only simplistic information is provided

Sometimes tracer studies provide only simplistic information. They use a very small range of 'objective' data on:

(a) employment (employment status and income);

(b) TVET education (type of institution, level of degree, field of study and individual institution).

The key issues relevant for quality management are missing:

(a) generation and utilisation of knowledge;

(b) the extent and the dimension of professional impact of TVET/higher education education/ training ([10]).

[10] See Volume 1 (Chapter 4) for suggestions of indicators on skills supply, demand and mismatch which can build on various data sources including tracer studies. These indicators may be used to a limited extent by an individual institution which conducts a tracer study, but bring significant added value if comparable results are available at national or regional level. Information from other data sources should help in the interpretation of the results of a tracer study.

9.2.3. Missing or wrong interpretation of findings

Interpretation of findings is often missing in reports about tracer studies. Reports are often just a verbalisation of selected descriptive findings provided in tables and charts. ometimes even such simple text is misleading because only selected findings are presented, as in the example below.

> 'The diploma of vocational education was important for employers during employment of 39.7% of graduates. In the case of employment of 18.4% graduates the diploma was "the most important" factor, and for 21.3% of graduates the diploma was of secondary importance for employers at the moment of employment.'

The authors did not report another answer of the graduates: 55% of the graduates reported that their vocational education was of 'no importance', a finding available only by checking the relevant chart.

Sometimes the interpretation of findings is completely wrong because the report writers do not have the necessary background knowledge to make meaningful interpretations. The following example is taken from a published report about a tracer study with graduates from higher education in Uganda.

'Graduates were asked to characterise the relationship between their field of study and their occupations at the time of interview. Table 58 gives a summary of characterisation by programme. The figures in the table give a rating by the graduates on the content of the programmes offered by the institutions.'

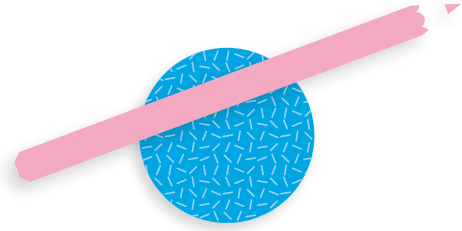
'Table shows that 46% of the graduates believed that their field of study is the only possible/by far best field for their employment, while 27% thought that some other fields could prepare them well for their employment. 5% believed that another field would have been more appropriate, and 2% indicated that their field of study was irrelevant to their employment.'

'Eighty five percent (85%) of doctors and diploma in animal husbandry holders, 83% of lawyers and 72% of engineers, characterised their studies as the only and best field for their employment compared to only 10% of graduates of development studies, social sciences and arts. These findings confirm the argument that the general degrees do not provide adequate preparation for graduates while the specialised degrees prepare their graduates for the field of work better.' (Makerere Institute of Social Research, 2006, p. 31).

Table 58. Characterisation of relationship between field of study and occupation by programme

Programme	Characterisation of Relationship													
	Field of study only possible/ by far the best field		Some other fields could prepare for the area of work as well		Another field would have been more useful		Field of study does not matter very much		Higher education studies not related to area of work		Others		Total	
	#	%	#	%	#	%	#	%	#	%	#	%	#	%
Degree in Human Medicine	44	84.60	7	14	1	2							52	100
Degree in Law	40	83.30	6	13			1	2			1	2	48	100
Degree in Social Sciences	3	10.00	20	67	3	10	4	13					30	100
Degree in Agriculture	12	38.70	14	45	3	10	2	7					31	100
Degree in Architecture	5	50.00	3	30	1	10			1	10			10	100
Degree in Business Administration	20	47.60	11	26	1	2	7	17	3	7			42	100

Source: Makerere Institute of Social Research, 2006, p. 32.



Their interpretation 'that the general degrees do not provide adequate preparation for graduates while the specialised degrees prepare their graduates for the field of work better' seems to have the underlying assumption that only the first answer 'Field of study is the only possible/by far the best field' indicates an 'adequate preparation' for the work tasks of graduates. This position ignores the known fact that, in higher education, only a few groups of graduates have closed labour markets where only their specific field of study allows them to enter a specific profession. In most countries of the world this is only the case for graduates from medicine and law. These classical professions have very restrictive regulations which usually do not allow graduates from other fields to enter their profession. Other fields of study do not use such an approach and it is therefore not meaningful to describe this situation as 'not adequate preparation'. Also the distinction between general degrees and specialised degrees is misleading. Medicine and law are usually not classified as specialised degrees but as professional fields, is engineering. More important in higher education is the distinction between the professional and academic orientation of study programmes.

The authors also neglect the fact that the answer 'some other fields could prepare for the area of work as well' does not indicate a mismatch of skills and job requirements because it only says something about the flexibility of job demands regarding graduates from different fields of study.

9.3. Method report

An important part of the report of the results is a method report. The reader should be able to understand the processes and the result of the data collection activities as well as the objectives and the questionnaire of the tracer study.

Every tracer study should have a method report.

The following 15 aspects should be a guide for a method report, which could be a separate report or a part of the main report of the results. All these topics are covered in the guide:

(a) background of the tracer study;

(b) description of the objectives (Chapter 2);

(c) development of the research instruments/ questionnaires (sources?) (Chapters 5 and 6);

(d) test of the questionnaire (Chapter 5);

(e) target population (Chapter 2);

(f) quality and quantity of addresses (Chapter 6);

(g) update procedures for addresses (Chapters 6 and 7);

(h) timing of the survey, reminder actions (Chapters 6 and 7);

(i) response statistics (Section 7.4);

(j) check of representativity (comparison with existing statistics);

(k) data entry and coding procedures (Chapter 8);

(l) kind of plausibility checks and data cleaning (Chapters 7 and 8);

(m) data analysis procedures (software and procedures used) (Chapter 8);

(n) critical reflection about the quality of the data (reliability and validity).

9.4. Report on results

It is not only the results that are decisive for the effectiveness of a survey but also the way they are presented. Many tracer studies implemented at great cost did not achieve great effectiveness because too little attention was paid to reporting.

The publication of the report is strongly recommended.

It is more costly to produce a survey report with the aim of publishing it for a wider readership than for an internal report, but this extra work is worthwhile.

9.4.1 Report for participating graduates

A short report should be provided for the graduates who participated in the tracer study. This could also be an incentive to participate in the survey.

> Write a short report for the graduates who participated in the tracer study.

9.4.2 Reports as incentives to participate

Such reports (perhaps made available on the website of the tracer study) could also motivate current students to participate when they graduate. Published reports demonstrate the use of the results by the institution and could be a key aspect in establishing a culture of self-evaluation and self-assessment.

9.4.3 Recommendations for reporting

It is not possible to standardise the drafting of the survey report. A few general recommendations are offered below.

Information about the institution and the study programme

Consider that some of the readers (the public, employers, later students and their parents) might have little or no knowledge of the educational programme of the TVET/higher education institution. Therefore, avoid using abbreviations which may not be familiar to everybody.

> Avoid abbreviations in the report.

Introduction to the subjects

Every chapter in the report needs a short introduction to the subject/the questions investigated:

(a) what you want to know;

(b) why you want to know it: explain the practical purpose;

(c) the theoretical context.

Presentation of the selected findings

(a) the results;

(b) most of the time, the 'result' is a statistical descriptive; we especially recommend percentages, as they can best be understood by the readers; arithmetic means are only comprehensible when the scale is explained;

(c) if, for example, it is reported that X% of the graduates indicate that their professional position is appropriate to their studies, this has come from the SPSS-jobs, mainly the table volume.

Use precise terms

Indefinite terms such as many, several, few, some (when referring to graduates) are best avoided if the exact information is not presented in the form of statistical descriptives at the same time. Using 'many graduates (82%) …' is acceptable as the term 'many' is clarified in the parenthesis.

Present complete results in tables and/or charts

The main findings should also be presented in the form of a table or a graph (next to the information in the text). Most tables and graphs contain much more information than can be given in the text, and by studying them the reader is able to check the presentation of the results as well as to infer additional details about the question and answers. Tables and graphs should always contain the full information about the formulation of the question and the answers, including the scale they are based on.

First present overall results and then group results

For the reader it is much easier to understand the presentation if it first gives the results for the total population and – where interesting – then differentiates the findings.

Number of decimal points

Usually it is not recommended that percentages with decimal points be used (wrong: 11.3%; correct: 11%).

Tracer study data are not usually of sufficient quality to allow conclusions based on the number on the right side of the decimal point. These numbers are meaningless because that precision of measuring is not reached.

In the case of the arithmetic mean or median, one decimal place is sufficient.

Do not present percentages with decimal points.

9.5. Tables report

A very useful tool for the presentation of the results of a tracer study is a complete tables report. Such a report includes all answers to all questions, with a breakdown of the groups of main interest.

In Annex 3 a complete tables report is provided which could be used as an example.

The tables report comprises all questions of the questionnaire in the original sequence.

With such a tables report it is easy to select interesting findings (tables) and write comments and interpretations. The tables could also be copied to Excel for creating charts.

Such tables reports should be produced for the key 'break variables' (such as study programme, gender, economic sector) related to the objectives of the tracer study.

Proposals for break variables include:

(a) field of study or study programme;

(b) kind of degree/qualification;

(c) combination of field of study and gender;

(d) employment status;

(e) economic sector.

9.6. Interpretation of results and practical conclusions

Practical conclusions from the results of the tracer study can only be drawn if in-depth interpretation of the results is undertaken.

Interpretation of results requires:

(a) critical reflection on the possibility of biased results;

(b) comparison of results with other studies;

(c) comparison of results from similar questions in the tracer study;

(d) consideration of information about the education context, not gained through the study (such as information about the institution and the study programme/training course);

(e) consideration of information about the labour market, not gained through the study (such as information about unemployment, economic cycle, economic structure in a region).

The task of interpretation is therefore always combined with data analysis.

Comparability

An important aspect of the interpretation of findings is comparability with findings from other tracer studies at the same institution which were done earlier, or with tracer studies from other institutions.

Within one institution, the comparison between study programmes is most important. All results of the study must be presented at the level of study programmes/training courses if conclusions for this level are the objective. Overall results for the whole institution are less interesting in this context, but relationships within the collected data are relevant and should be checked and compared systematically.

Appropriate statistical methods

The use of the appropriate statistical methods is also crucial in interpreting results, before conclusions for policy decisions can be drawn. The results are always produced by a selected statistical method: there is no simple direct way from the data to results.

For example, to reduce the statistical analysis in a way that only simple frequencies are presented for the whole population (such as all graduates from one institution) is misleading because there can be big differences between aspects such as study programmes/training courses and gender. To what extent these differences exist and how they explain the 'employment outcomes' must be tested with appropriate statistical methods such as cross tabulation, analysis of variance and regression analysis.

Statistical significance and importance of findings

Interpretation of results should usually be based on 'statistical significance', but this is not identical to 'importance'. Statistical significance helps to avoid an over-interpretation of findings which might have occurred by chance. This is especially important if the number of cases is small.

Biased results

In interpreting the findings it should always be discussed whether the results might be biased, i.e. that they might be influenced in a certain direction and not only by a random error. To detect biased results a method report should contain precise and full information about the survey procedures (Chapters 6 and 7).

Since it is almost impossible to correct biased results, attempts to ensure that the sample of participating graduates is representative are crucial for the whole study. If a bias cannot be avoided this has to be made clear in the report as a key input to meaningful discussion of the results.

Selection bias

If the sample of graduates participating in the tracer study is not representative of the total population, the result may be misleading. For example, contacting only graduates who are members of the alumni association of the institution might bias the sample towards successful ones. Bias could also result from only having addresses of graduates from the region of the capital of the country.

Confounding

If conclusions are to be drawn from the results it is necessary to discuss carefully all possible factors which might contribute.

For example, the results of a tracer study report a high level of 'mismatch' of skills acquired during study/training and work tasks. What does this mean? Can we draw the conclusion that we should change the curriculum or that we should close the study programme/training?

Such conclusions ignore many factors besides the education/training gained that might explain the result.

Some of them can be addressed directly in the questionnaire:

(a) the current job is only a temporary stepping stone;

(b) higher salary in the current job;

(c) job offers more security;

(d) interests have changed;

(e) current job allows a flexible time schedule;

(f) current job allows the person to work in a favoured geographical place;

(g) current job allows teh person to take into consideration the interests of their family/children;

(h) other reasons.

See the sample questionnaire in the Annex 2, Question H5: If your job is not closely related to your course of study, why did you choose this job? Multiple answers possible.

Individual motivation, vertical match and the labour market at a given time and in a certain region are all relevant factors which must be considered before conclusions can be drawn.

Interpretations aim to explain findings or at least classify them within an explanation frame. Often these interpretations begin with the following sentence: 'It has to be taken into consideration that...'. In scientific surveys which are used to test specific hypotheses, the theory that is to be examined already represents the explanation and interpretation frame. In contrast, graduate surveys are seldom implemented to test comparable individual hypotheses; instead, they supply a multitude of information which is useful for different kinds of objectives.

Therefore, while presenting the results and their interpretation it is important to develop an interpretation frame which classifies individual findings. This is possible by choosing relative comparison standards for the interpretation. It is interesting, for example, to compare the results of Question C2 ('How would you rate the study conditions and provisions you experienced at the TVET/higher education institution?'):

(a) by subject area;

(b) by gender within subject area;

(c) by employment status.

Change over time

If the tracer studies are done every year, comparison with the results from different years will lead to an interesting option for interpretation. Where measures to improve the study conditions and provisions (such as the curriculum) have been implemented, regular tracer studies can help to find out if these improvements have had effects on the competencies of graduates and their employability. The results of earlier tracer studies can then be used as a baseline for comparison, though other contextual factors (e.g. labour market) must be also considered.

9.7. Tracer studies in international development cooperation projects

In many international development projects in TVET and higher education, with agencies such as the World Bank, Asian Development Bank, Deutsche Gesellschaft für international Zusammenarbeit (GIZ), and the Japan International Cooperation Agency (JICA), the results of tracer studies are important in monitoring and evaluation.

The following GIZ guideline outlines the concept:

> 'Monitoring and measuring results are imperatives for practitioners in international development cooperation, since they are the only means to provide evidence of the results and effectiveness of development work in partner countries. […] Planning, monitoring and evaluation are used to reflect the results of development measures and programmes. Results-based monitoring in particular is a fundamental part of project management. By continuously checking the effects of an intervention it is possible to identify positive and negative developments early enough to address them. It makes clear which measures are working and which are not achieving results or not the desired results. Monitoring is also the basis for sound accountability.' (Meyer and Thomas, 2011, p. 6).

More specific are the relevance and methodology of tracer studies described in the following GIZ tracer study guideline:

> 'Tracer studies can be an effective tool for following-up the situation of graduates from any educational institution (professional secondary school, college, university). They allow collecting information on labour market success of graduates, on the effectiveness, adequateness, quality of the training, and on many other aspects which makes them relevant for the steering of a market-oriented educational and vocational training system as well as the on-going TVET reform process. […] By means of the collected information, tracer studies not only allow a comparison of training institutions with respect to their training effectiveness, but also an adjustment of training curricula to market needs. Furthermore they can give direct feedback to the training institutions on the quality of training by means of subjective evaluation but also by means of hard facts, such as the number of students that found a job in a given period of time.' (Ehlert and Kluve, 2011, p. 3)

In addition to Volume 1 of this guide, many agencies have produced guidelines which describe the use of tracer studies:

(a) European Training Foundation

IAG-TVET (2012).

(b) International Labour Organization

Billorou et al. (2011); ILO-IPEC (2011); Ibarguen and Abdul Cader (2005).

(c) Deutsche Gesellschaft für Internationale Zusammenarbeit

Ehlert and Kluve (2011); Kluve et al. (2011).

(d) Helvetas

Macchi et al. (2009); Helvetas (2009).

(e) World Bank

Psacharopoulos and Hinchcliffe (1983).

(f) UNESCO

Lamour (1996).

(g) Use at system level: TVET/higher education policy

In many countries tracer studies are used to inform decision-makers at different system levels (country, region, institution) about the job prospects of graduates and their evaluation of the study/training programme. To regularly obtain such information many countries (including Australia, France, Germany, Hungary, Indonesia, Italy, Malaysia, the Netherlands, Norway, Switzerland, the UK and the US) carry out tracer studies.

Mostly the results are published and access is possible for a broad audience. The results are also used for national reports on the development of the education system.

(h) Example of a GIZ TVET project in Indonesia

Project title: 'Sustainable economic development through technical and vocational education and training (SED-TVET)'

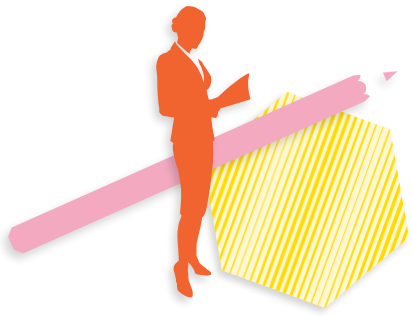
'To make vocational education more relevant for industry needs, both education providers and private businesses have to systematically exchange information on the development of local labour markets including future human resource and competency demands. SED-TVET supports local actors to develop and implement instruments for information exchange and collaboration, such as graduate tracer studies. Furthermore, SED-TVET supports partner institutes to use this information to adapt curricula and offer career counselling and guidance services for the better transition into employment of young job seekers.' (GIZ and KFW, 2013)

Since the employability of graduates might depend on many factors which are not shaped by the study programme, the practical consequences of the results of tracer studies are often not self-evident. The results – if carefully analysed – might give some hints of strengths and weaknesses of the study programme, but education decision-makers cannot simple derive their change strategies from the findings.

Also, the retrospective evaluation of the study programme by the graduates might be biased, for example, according to different experiences on the labour market. For instance, if a cohort of graduates suddenly faces severe problems in securing appropriate employment due to an economic crisis, their retrospective ratings of the study conditions and study provisions might be negatively influenced by their experiences of the poor labour market rather than by the study conditions and provisions.

9.8. Misinterpretation of findings

Findings on the professional success of graduates cannot be taken as a direct result of the study/training, so conclusions for improvements cannot be drawn from the findings without the discussion of relevant contextual factors. For instance, low graduate employment can be the result of the motivation of many graduates to continue to study to reach a higher level of education or to change the area of professional training. It is generally misleading to take the results of tracer studies as simple indicators of performance which could be related directly to policy actions. Many indicators of professional success (such as employment status, income, vertical and horizontal links to study/training, job satisfaction) must be considered, and especially the labour market conditions in different sectors and regions.



9.9. Dissemination activities

The results of institutional tracer studies should be distributed to all stakeholders identified in developing the objectives of the study:

(a) mass media;

(b) students and their parents;

(c) graduates;

(d) staff of the education institution;

(e) decision-makers at different system levels (country, region, institution, department);

(f) student counsellors;

(g) careers advisers;

(h) employers;

(i) education researchers.

The University of Indonesia developed the following additional dissemination activities:

(a) alumni:
  (i) during their graduation ceremony;
  (ii) inserting in rector's speech;
  (iii) inserting in media promotion (video);

(b) publication
  (i) alumni website;
  (ii) faculty website;

(c) students:
  (i) learning orientation programme;
  (ii) student profession seminars.

Chapter 10.
Self-evaluation of study quality

10.1. Overview

This chapter offers an easy way to check the quality of the methodology of a tracer study. It is organised as a questionnaire and can be used in every phase of the study to evaluate what is planned to be done or what was done.

The following criteria for tracer study quality are taken from the different steps in conducting a tracer study described in this guide:

(a) objectives of the study;

(b) address database;

(c) quality of the questionnaire;

(d) survey procedures;

(e) data cleaning;

(f) data analysis;

(g) quality of reports;

(h) dissemination activities.

10.2. Objectives of the tracer study

NU076/ OR	**1 – To what extent do you agree with the following sentences regarding the objectives of the tracer study?**						QS1
	Not at all				To a very high extent		
	1	2	3	4	5		
1	☐	☐	☐	☐	☐	The objectives outlined in the report are very clear	V1_1
2	☐	☐	☐	☐	☐	The selection of the target population is related to the objectives	V1_2
3	☐	☐	☐	☐	☐	The objectives outlined in the report are explicitly related to research literature	V1_3
4	☐	☐	☐	☐	☐	The objectives outlined in the report are very detailed	V1_4
5	☐	☐	☐	☐	☐	The conclusions of the tracer study are related to the objectives	V1_5
6	☐	☐	☐	☐	☐	In general: the objectives of the tracer study are of high quality	V1_6

Maximum: 30 points

Very bad						Bad												Good						Very good					
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30

10.3. Address database

NU076/ OR	**2 – How do you rate the quality of the tracer study address database?**						QS2
	Not at all					To a very high extent	
	1	2	3	4	5		
1	☐	☐	☐	☐	☐	Completeness of addresses regarding the target population	V2_1
2	☐	☐	☐	☐	☐	Information regarding the update status of the addresses	V2_2
3	☐	☐	☐	☐	☐	Information about all update activities	V2_3
4	☐	☐	☐	☐	☐	Information about the process of the field phase	V2_4
5	☐	☐	☐	☐	☐	Information about the target population (e.g. field of study, qualification, gender)	V2_5
6	☐	☐	☐	☐	☐	The address database in general	V2_6

Maximum: 30 points

Very bad						Bad											Good						Very good					
									0	1	2	3	4	5	6	7	8	9	0	1	2	3	4	5	6	7	8	9	0

10.4. Quality of the questionnaire

NU076/ OR	**3 – How do you rate the following aspects of the tracer study questionnaire? If not applicable/non-existent use the value 1 = very bad.**						QS3
	Not at all					To a very high extent	
	1	2	3	4	5		
1	☐	☐	☐	☐	☐	The test of the questionnaire	V3_1
2	☐	☐	☐	☐	☐	Documentation of the sources of the questions in the questionnaire	V3_2
3	☐	☐	☐	☐	☐	The formatting of the questionnaire	V3_3
4	☐	☐	☐	☐	☐	The justification of the questions	V3_4
5	☐	☐	☐	☐	☐	The length of the questionnaire	V3_5
6	☐	☐	☐	☐	☐	The quality of the questionnaire in general	V3_6

Maximum: 30 point

Very bad						Bad											Good						Very good					
									0	1	2	3	4	5	6	7	8	9	0	1	2	3	4	5	6	7	8	9	0

10.5. Survey procedures

NU076/ OR	**4 – How do you rate the survey tracer study procedures? If not applicable/non-existent use the value 1 = very bad.**						QS4
	Not at all					To a very high extent	
	1	2	3	4	5		
1	☐	☐	☐	☐	☐	Sampling (selection of target population of the survey)	V4_1
2	☐	☐	☐	☐	☐	Response rate achieved	V4_2
3	☐	☐	☐	☐	☐	Response rate calculation	V4_3
4	☐	☐	☐	☐	☐	Documentation of activities to contact the graduates	V4_4
5	☐	☐	☐	☐	☐	Test of representativity of participating graduates	V4_5
6	☐	☐	☐	☐	☐	Survey procedures in general	V4_6

Maximum: 30 point

Very bad						Bad												Good						Very good					
									0	1	2	3	4	5	6	7	8	9	0	1	2	3	4	5	6	7	8	9	0

10.6. Data cleaning

NU076/ OR	**5 – How do you rate the tracer study data cleaning procedures? If not applicable/ non-existent use the value 1 = very bad.**						QS5
	Not at all					To a very high extent	
	1	2	3	4	5		
1	☐	☐	☐	☐	☐	Coding of open answers	V5_1
2	☐	☐	☐	☐	☐	Coding of half-open answers ('other')	V5_2
3	☐	☐	☐	☐	☐	Documentation of data (codebook)	V5_3
4	☐	☐	☐	☐	☐	Plausibility checks	V5_4
5	☐	☐	☐	☐	☐	Correction of the data errors	V5_5
6	☐	☐	☐	☐	☐	Data cleaning in general	V5_6

Maximum: 30 point

Very bad						Bad												Good						Very good					
									0	1	2	3	4	5	6	7	8	9	0	1	2	3	4	5	6	7	8	9	0

10.7. Data analysis

NU076/ OR	**6 – How do you rate the data analysis of the data of the tracer study? If not applicable/non-existent use the value 1 = very bad.**						QS6
	Not at all				To a very high extent		
	1	2	3	4	5		
1	☐	☐	☐	☐	☐	Descriptive analysis of the whole population	V6_1
2	☐	☐	☐	☐	☐	Descriptive comparison of groups (tables)	V6_2
3	☐	☐	☐	☐	☐	Statistical analysis of differences between groups (analysis of variance)	V6_3
4	☐	☐	☐	☐	☐	Multivariate analysis (such as regression analysis)	V6_4
5	☐	☐	☐	☐	☐	Causal analysis with LISREL, AMOS or other software	V6_5
6	☐	☐	☐	☐	☐	The data analysis in general	V6_6

Maximum: 30 point

Very bad						Bad												Good						Very good					
									0	1	2	3	4	5	6	7	8	9	0	1	2	3	4	5	6	7	8	9	0

10.8. Quality of reports

NU076/ OR	**7 – How do you rate the reports of the tracer study? If not applicable/non-existent use the value 1 = very bad.**						QS7
	Not at all				To a very high extent		
	1	2	3	4	5		
1	☐	☐	☐	☐	☐	Tables report	V7_2
2	☐	☐	☐	☐	☐	Presentations (e.g. Powerpoint)	V7_3
3	☐	☐	☐	☐	☐	Scientific reports/publications	V7_4
4	☐	☐	☐	☐	☐	Recommendations related to the data/results	V7_5
5	☐	☐	☐	☐	☐	The reports in general	V7_5
6	☐	☐	☐	☐	☐	Tables report	V7_2

Maximum: 30 point

Very bad						Bad												Good						Very good					
									0	1	2	3	4	5	6	7	8	9	0	1	2	3	4	5	6	7	8	9	0

10.9. Dissemination activities

NU076/ OR	**8 – How do you rate the dissemination activities? If not applicable/non-existent use the value 1 = very bad.**						QS8
	Not at all				To a very high extent		
	1	2	3	4	5		
1	☐	☐	☐	☐	☐	Information/reports to the management of the institution	V8_1
2	☐	☐	☐	☐	☐	Information/reports to staff of the TVET/ higher education institution	V8_2
3	☐	☐	☐	☐	☐	Mass media information	V8_3
4	☐	☐	☐	☐	☐	Use of the results for improving the curriculum	V8_4
5	☐	☐	☐	☐	☐	Use of the results for improving the study conditions and provisions at the TVET/higher education institution	V8_5
6	☐	☐	☐	☐	☐	The dissemination activities in general	V8_6

Maximum: 30 point

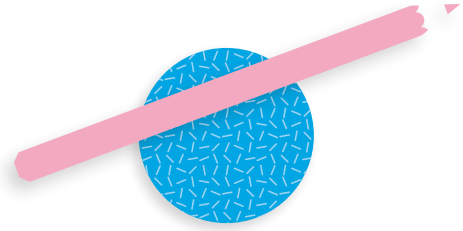
Very bad						Bad											Good						Very good					
									0	1	2	3	4	5	6	7	8	9	0	1	2	3	4	5	6	7	8	9	0

ACRONYMS

Cedefop	European Centre for the Development of Vocational Training
Céreq	Centre d'études et de recherches sur les qualifications [Centre for studies and research on qualifications] (France)
Cheers	Careers after Higher Education: a European Research Study
CRRC	Caucasus Research Resource Centre (Armenia)
ETF	European Training Foundation
G20	Group of Twenty
GIZ	German agency for international cooperation [Deutsche Gesellschaft für Internationale Zusammenarbeit]
GTZ	German agency for technical cooperation [Deutsche Gesellschaft für Technische Zusammenarbeit]
Hegesco	Higher Education as a Generator of Strategic Competencies
HIS	Higher Education Information System (Germany)
IAG-TVET	Inter-Agency Working Group on Technical and Vocational Education and Training Indicators
ILO	International Labour Organization
IPEC	International Programme on the Elimination of Child Labour
ISCO	International Standard Classification of Occupations
ISCO-08	International Standard Classification of Occupations, approved in 2008
ISIC	International Standard Industrial Classification of All Economic Activities
JICA	Japan International Cooperation Agency
KOAB	Das Kooperationsprojekt Absolventenstudien [The graduate survey cooperation project] (Germany)
LMIS	Labour market information system
NACE	Nomenclature statistique des activités économiques dans la Communauté européenne [Statistical classification of economic activities in the European Community]
NUTS	Nomenclature of territorial units for statistics
ROA	Research Centre for Education and the Labour Market (The Netherlands)
SED-TVET	Sustainable Economic Development through Technical and Vocational Education and Training
SPSS	Statistical Package for the Social Sciences
SWTS	School-to-Work Transition Survey
TESDA	Technical Education and Skills Development Authority (Philippines)
TVET	Technical and vocational education and training
UNESCO	United Nations Educational, Scientific and Cultural Organisation
USD	US dollar
VET	Vocational education and training

KEY TECHNICAL TERMS

Anticipation	Denotes various qualitative and quantitative methods aimed at identifying future skill needs. Volume 4 considers only short- to medium-term anticipation, while long-term anticipation using forecasting or foresight methodologies (usually for more than five years) is covered by Volume 2.
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, TVET glossary http://www.unevoc.unesco.org/tvetipedia.html?tx_drwiki_pi1%5Bkeyword%5D=glossary).
Employability	Refers to the combination of factors which enable individuals to progress towards or get into employment, to stay in employment and to progress during 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 the enterprise and between jobs, and to cope with changing technology and labour market conditions (ILO, 2004).
Employment service provider	This guide 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.
Foresight studies	Foresight studies are typically multi-disciplinary, mostly qualitative approaches. These are systematic future intelligence gathering and medium- to long-term vision building processes that aim to identify opportunities and areas of vulnerability to assist present-day decision-making. The key feature of foresights is their action orientation. Foresights may assume alternative futures in the form of scenarios. 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 jobseekers. 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, skills obsolescence and so forth. 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).
Private employment agencies (PREA)	Any natural or legal person, independent of the public authorities, which provides one or more labour market services such as job brokering, counselling services or any other assistance to job searching. This term includes temporary work agencies as per the definition below (ILO, 2007). See Volume 4.
Profiling	An assessment of the employability of jobseekers performed by public employment service (PES) counsellors, often using IT and dedicated statistical tools. The rationale for profiling is to make labour market integration more effective by better targeting services and scarce resources. Profiling is frequently used to diagnose individual strengths and weaknesses as part of personal action planning to anticipate the risk of long-term unemployment. The overall purpose of profiling is to optimise the effectiveness and efficiency of PESs for jobseekers (Weber, 2011). See Volume 4.
Public employment service (PES)	The core functions of PESs 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; the 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 levels. 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 being the ability to carry out a 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 in order to complete tasks and solve work-related problems.
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 when the type of skill does not match the job requirements (Cedefop, 2010).
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 jobseekers with certain skills is insufficient to fill all available job vacancies.
Temporary work agency	A private or not-for-profit company that directly employs workers and hires them out to work in other enterprises under the supervision of the user (ILO, 2014). See Volume 4.

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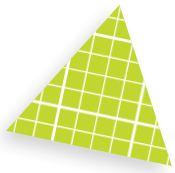

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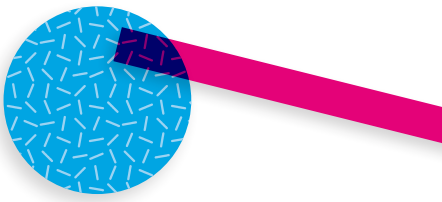

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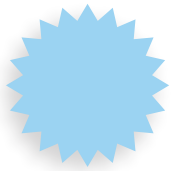

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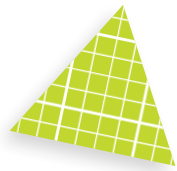

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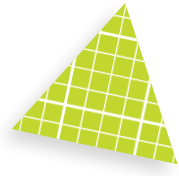
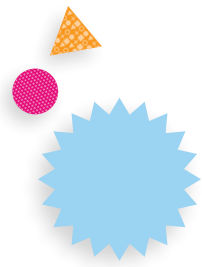
ANNEXES





ANNEX 1.
Minimum version of specimen questionnaire for a TVET tracer study

Name of the VET Institution

Survey of Graduates of the year 2012 (Minimum version)

Dear Graduates,

As head of the research group, I kindly request your participation in a survey of graduates who completed their studies in 2012.

We would like to find out what happened to you after you completed your studies. Did you find a job or are you still looking for a job, did your studies prepare you well for the workplace, and do you use the knowledge and skills you have learned during your studies?

The core objectives of the graduate survey are to improve the study programmes and, more specifically, to revie the curricula.

Your information will be treated in strict confidence. The results will be published in such a way that identification of individual persons is excluded.

Results of this survey will be published on the website of the institution (http://XXX.YYY.XX). At your request we will send you a printed version of the report with the main results of the survey.

Please return the completed questionnaire as soon as possible to the address mentioned below.

Thank you very much in advance for your kind support.

Mr. XXX
(Project leader of the XXX graduate survey team)

Send the questionnaire to:

Name:	**XXX**
Postal address:	**XXX**
Phone:	**XXX**
E-mail:	**XXX**

Logo and image of the VET institution

Explanatory Notes

How long does it take to fill in the questionnaire?

Most of you will need about half an hour, depending on the kind of experiences you have undergone during recent years.

We have developed a highly standardised questionnaire, which mainly expects you to mark boxes which refer to relevant answers. With this approach we hope that we have made it easy for you to answer the questions.

How to answer the questions

Please answer all questions applicable to you. In some cases, you will note that the questionnaire suggests you disregard some questions not applicable to you (e.g. → **Please continue with question B7***).*

Since the questionnaire will be captured with the help of a scanner, please fill it in legibly.

Please mark the most appropriate answer like this → ☒

Example of a 5-point scale

In some questions we have employed answer scales from 1 to 5 (e.g. 1 = very bad to 5 = very good).

→ *Mark only one box for each item (row).*

→ *If you would like to correct your answer, make the wrong one black and mark and underscore the right one*

	A7					**To what extent were the following reasons important for your decision to study at the VET institution? Please respond to each factor on the five-point scale.**
	Not at all important				Very important	
	1	2	3	4	5	
1	☒	☐	☐	☐	☐	Vicinity to home of parents or other relatives
2	☐	☒	☐	☐	☐	Availability of scholarship
3	☐	☐	☒	☒	☐	Availability/quality of accommodation

Open answers

Sometimes we leave space for you to write an answer (……). If the space for your replies is not sufficient, please include an additional sheet of paper.

Your help to improve the survey is welcome

This questionnaire is used in different VET institutions with a wide range of different fields of study. We could not take into consideration every specific detail of study and work which might be relevant for the survey. Therefore we would appreciate your comments and additional information.

	A	The course of studies at the XYZ VET institution	S1

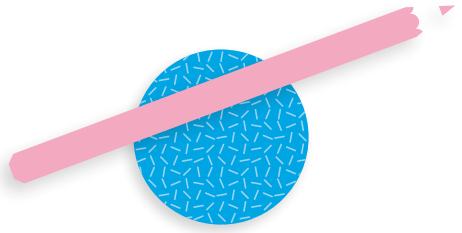
	A4	Which qualification did you achieve at the VET institution?	Q4
1	☐	Certificate	
2	☐	Diploma	
3	☐	Other (please specify):	

	A5	What was the name of the study programme at the VET institution?	Q5
1			

	B	Internship and work experience during course of studies at the VET institution	S2

	B1	Did you do any internships during your course of studies (this does not refer to team projects, practical courses etc.)?	Q13
1	☐	Yes	
2	☐	No	

	B5	Were you employed during your study? Please include full-time as well as part-time work; do not include internships.	Q17
1	☐	Yes	
2	☐	No	



	C	Evaluation of study conditions and study provisions at the VET institution	S3

	C2	How would you rate the study conditions and provisions you experienced at the VET institution?	Q20

	Not at all good				Very good	
	1	2	3	4	5	
1	☐	☐	☐	☐	☐	Quality of classroom learning
2	☐	☐	☐	☐	☐	Student recreational facilities on campus
3	☐	☐	☐	☐	☐	Supply of learning materials (e.g. books, internet access)
4	☐	☐	☐	☐	☐	Opportunity for consultation with teaching staff
5	☐	☐	☐	☐	☐	Teaching quality of lecturers
6	☐	☐	☐	☐	☐	Internship programme
7	☐	☐	☐	☐	☐	Contacts with fellow students
8	☐	☐	☐	☐	☐	Chances for students to have an influence on VET institution policies
9	☐	☐	☐	☐	☐	Availability of technical equipment (e.g. lab equipment, measuring instruments, computer lab)
10	☐	☐	☐	☐	☐	Quality of technical equipment
11	☐	☐	☐	☐	☐	Supply of teaching materials
12	☐	☐	☐	☐	☐	Quality of buildings
13	☐	☐	☐	☐	☐	Other (please specify): .....

	C4	How do you rate the following elements related to employment and work in your study course?				Q22
	Very bad				Very good	
	1	2	3	4	5	
1	☐	☐	☐	☐	☐	Preparation for work
2	☐	☐	☐	☐	☐	Subject matters (teaching contents) are up to date with regards to practical requirements
3	☐	☐	☐	☐	☐	Practical experiences of teaching staff
4	☐	☐	☐	☐	☐	Relationship between theory and practice
5	☐	☐	☐	☐	☐	Practice-oriented teaching contents
6	☐	☐	☐	☐	☐	Mandatory internships
7	☐	☐	☐	☐	☐	Offers for acquisition of key competencies
8	☐	☐	☐	☐	☐	Support of employment/job search
9	☐	☐	☐	☐	☐	Support of internship search

	D	Satisfaction with study	S4

	D2	Looking back, if you were free to choose again to what extent would you probably choose the same field of study?				Q26
	Not at all				To a very high extent	
	1	2	3	4	5	
	☐	☐	☐	☐	☐	

	D3	Looking back, if you were free to choose again to what extent would you probably choose the same VET institution?				Q27
	Not at all				To a very high extent	
	1	2	3	4	5	
1	☐	☐	☐	☐	☐	

	D4	In retrospect, to what extent are you satisfied with your studies in general?				Q28
	Not at all				To a very high extent	
	1	2	3	4	5	
1	☐	☐	☐	☐	☐	

	E	After graduation from the VET institution	S5

	E1	What applied to your situation in the first six months after graduating? Multiple answers possible.	Q29
1	☐	Employment	
2	☐	Self-employed/freelance work	
3	☐	Occasional job (just to earn money)	
4	☐	Internship	
5	☐	Further academic education (higher education)	
6	☐	Further vocational education/training	
7	☐	Housewife, househusband, family work	
8	☐	Not employed, but searching for a job	
9	☐	Military or civil service	
10	☐	Other (please specify):	

	E2	When did you start your first job after graduation?	Q30
1	☐	Before graduation	
2	☐	At the time of graduation	
3	☐	Less than 1 month after graduation	
4	☐	1 to less than 3 months after graduation	
5	☐	3 to less than 6 months after graduation	
6	☐	6 to less than 9 months after graduation	
7	☐	9 to less than 12 months after graduation	
8	☐	More than one year after graduation	
9	☐	I have not been employed since graduation	

	E4	If you did not search for employment: what were your reasons? Multiple answers possible.	Q32
1	☐	I continued studying	
2	☐	I continued in a job I had prior to studying	
3	☐	I found a job without searching	
4	☐	I became self-employed / a freelancer	
5	☐	Other (please specify):	

	If you did not search for employment → **Please continue with question J3**	FI1

	E6	How long have you searched for your first job? Include also job search period before graduation.	Q34
1	☐	Less than 1 month	
2	☐	1 to less than 3 months	
3	☐	3 to less than 6 months	
4	☐	6 to less than 9 months	
5	☐	9 to less than 12 months	
6	☐	More than one year	

	E7	What was the most successful method for finding your first job? Choose only one answer.	Q35
1	☐	Replied to job ads/announcements (e.g. newspaper, internet, notice)	
2	☐	With the help of family contacts of parents, relatives	
3	☐	With help of personal contacts of friends, fellow students etc.	
4	☐	Speculative application – independent contact to employers	
5	☐	Through internships during my course of studies	
6	☐	Through internships after graduation	
7	☐	Through (side) jobs during study	
8	☐	Through (side) jobs after graduation	
9	☐	I was contacted by an employer	
10	☐	Job fair	
11	☐	Through the public job centre	
12	☐	Through private job agencies	
13	☐	Through internet (social) networks (e.g. Facebook)	
14	☐	Through the careers centre of the VET institution	
15	☐	Through teaching staff at the VET institution	
16	☐	Not applicable, I did not find a job yet	
17	☐	Other (please specify):	

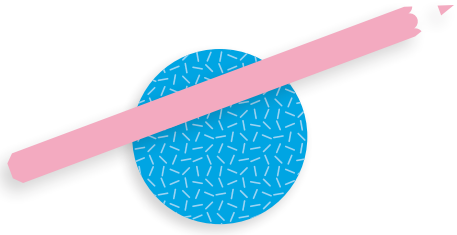
	F	Employment and work	S6

	F1	What describes your current situation? Multiple answers possible.	Q39
1	☐	Regular job	
2	☐	Self-employed/freelance work	
3	☐	Occasional job (just to earn money)	
4	☐	Internship	
5	☐	Further academic education (higher education)	
6	☐	Further vocational training	
7	☐	Housewife, househusband, family care	
8	☐	Not employed, but searching for a job	
9	☐	Military or civil service	
10	☐	Other (please specify):	

	F3	How many jobs (including your current one) have you had altogether since graduation?	Q41
1	☐	No job, I have not been employed since graduation	
2	☐	One job	
3	☐	Two jobs	
4	☐	Three jobs	
5	☐	More than three jobs	

		If you are currently unemployed → **Please continue with question H6**	FI2

	F4	How many hours do you work per week?	Q42
1	☐	Less than 20 hours per week	
2	☐	21 to 30 hours	
3	☐	31 to 40 hours	
4	☐	41 to 50 hours	
5	☐	More than 50 hours	



	F5	Are you permanently employed?	Q43
1	☐	Yes	
2	☐	No	
3	☐	Not applicable, I am self-employed	

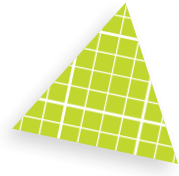
	F8	In which region are you employed?	Q46
1		.....	

	F9	What type of employer do you work for?	Q47
1	☐	Public/government	
2	☐	Parastatal	
3	☐	Private	
4	☐	Self-employed	
5	☐	Non-governmental organisation (NGO)	
6	☐	International and diplomatic	
7	☐	Other (please specify):	

	F10	In which economic sector are you currently employed (e.g. fisheries, agriculture, secondary education)?	Q48
1		.....	

	F11	What is your occupation/job title (e.g. primary school teacher)?	Q49
1		.....	

	F12	Outline the three main duties/work tasks.	Q50
1		.....	
2		.....	
3		.....	



	F13	What is your current gross monthly income?	Q51
1	☐	Less than $ 100	
2	☐	$ 100 - 150	
3	☐	$ 151 - 200	
4	☐	$ 201 - 250	
5	☐	$ 251 - 300	
6	☐	$ 300 - 350	
7	☐	$ 351 - 401	
8	☐	$ 401 - 450	
9	☐	More than $ 450	

	F14	What kind of fringe/other benefit(s) do you receive? Multiple answers possible.	Q52
1	☐	Housing (subsidy, rent allowance)	
2	☐	Transportation (car/transport allowance)	
3	☐	Health (medical aid, insurances)	
4	☐	Education and training (staff development, family study rebate)	
5	☐	Retirement (pension, gratuity)	
6	☐	None	
7	☐	Other (please specify):	

	F15	How many employees work in your company/organisation in total? Please estimate the number.	Q53
1	☐	1 to 9 employees	
2	☐	10 to 49 employees	
3	☐	50 to 99 employees	
4	☐	100 to 249 employees	
5	☐	250 to 999 employees	
6	☐	1 000 or more employees	

	G	Work requirements	S7

	G1	To what extent are the following skills/competencies required in your current employment?	Q55

	Not at all				To a very high extent	
	1	2	3	4	5	
1	☐	☐	☐	☐	☐	Mastery of my field/subject-specific knowledge
2	☐	☐	☐	☐	☐	Ability to develop new ideas and solutions
3	☐	☐	☐	☐	☐	Ability to assert my authority
4	☐	☐	☐	☐	☐	Ability to adapt to changing conditions
5	☐	☐	☐	☐	☐	Ability to mobilise the capacities of others
6	☐	☐	☐	☐	☐	Analytical thinking
7	☐	☐	☐	☐	☐	Willingness to question my and others' ideas
8	☐	☐	☐	☐	☐	Ability to work efficiently towards a goal
9	☐	☐	☐	☐	☐	Ability to organise my work processes efficiently
10	☐	☐	☐	☐	☐	Ability to work productively with others
11	☐	☐	☐	☐	☐	Ability to perform well under pressure

	H	Relationship between study and employment	S8

	H1	To what extent are the knowledge and skills you acquired during study utilised in your current job?	Q56

	Not at all				To a very high extent
	1	2	3	4	5
1	☐	☐	☐	☐	☐

	H2	In your opinion, what field of study is most appropriate for your current job?	Q57

1	☐	Exclusively own field
2	☐	Own or a related field
3	☐	A completely different field
4	☐	No particular field

	H3	In your opinion, which qualification/degree level matches best for your current job?	Q58
1	☐	A higher degree/qualification	
2	☐	My degree/qualification	
3	☐	A lower degree/qualification	
4	☐	No degree/qualification necessary	

	H4	To what extent is your professional position appropriate to your course of study?				Q59
	Not at all				To a very high extent	
	1	2	3	4	5	
1	☐	☐	☐	☐	☐	

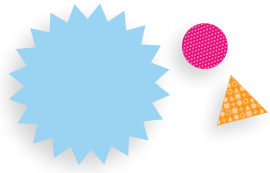
	H5	If your job is not closely related to your course of study, why did you choose this job?	Q60
1	☐	Not applicable, my job is closely related to my course of study	
2	☐	My current job is only a temporary stepping stone, I am still searching for professional orientation	
3	☐	I have not found an appropriate job (yet)	
4	☐	I receive a higher salary in my current job	
5	☐	My current job offers more security	
6	☐	My interests have changed	
7	☐	My current job allows a flexible time schedule	
8	☐	My current job allows me to work in a favoured geographical place	
9	☐	My current job allows me to take into consideration the interests of my family/children	
10	☐	Other (please specify):	

	H6	Overall, how do you rate the usefulness of your studies?				Q61
	Not at all useful				Very useful	
	1	2	3	4	5	
1	☐	☐	☐	☐	☐	For finding an adequate job after finishing your studies
2	☐	☐	☐	☐	☐	For fulfilling your present professional tasks, if applicable
3	☐	☐	☐	☐	☐	For your future professional development/ career
4	☐	☐	☐	☐	☐	For the development of your personality
5	☐	☐	☐	☐	☐	For the economic development of your country

	I	Work orientation and job satisfaction	S9

	If you are not employed → **Please continue with question I3**	FI3

	I2	To what extent do the following aspects apply to your current job situation?				Q63
	Not at all				To a very high extent	
	1	2	3	4	5	
1	☐	☐	☐	☐	☐	Interesting work tasks
2	☐	☐	☐	☐	☐	Work autonomy
3	☐	☐	☐	☐	☐	Clear and regulated work tasks
4	☐	☐	☐	☐	☐	Possibilities for applying acquired competencies
5	☐	☐	☐	☐	☐	Job security
6	☐	☐	☐	☐	☐	Social status and recognition
7	☐	☐	☐	☐	☐	Possibilities to realise own ideas
8	☐	☐	☐	☐	☐	Good work atmosphere
9	☐	☐	☐	☐	☐	Possibilities for further professional advancement
10	☐	☐	☐	☐	☐	High salary
11	☐	☐	☐	☐	☐	Possibility of providing social influence
12	☐	☐	☐	☐	☐	To have a challenging job
13	☐	☐	☐	☐	☐	Good career advancement prospects
14	☐	☐	☐	☐	☐	Assumption of coordination and management tasks
15	☐	☐	☐	☐	☐	Possibilities to do something useful for the general public
16	☐	☐	☐	☐	☐	Good conditions for managing both work-related and family-related issues
17	☐	☐	☐	☐	☐	Sufficient time for leisure activities



	I3	What changes in employment and further education/training do you plan to achieve within the next three years? Multiple answers possible.	Q64
1	☐	To change my employer	
2	☐	To obtain higher income	
3	☐	To change my area of work assignment	
4	☐	To restart full-time study	
5	☐	To study part-time	
6	☐	To start my own business	
7	☐	To get employed	
8	☐	To discontinue employment	
9	☐	To achieve more secure employment	
10	☐	To achieve better use of my knowledge	
11	☐	To obtain a better chance of pursuing continuous learning	
12	☐	To take a job more closely linked to my study	
13	☐	Other (please specify):	
14	☐	I have no major changes in mind	

	I4	To what extent are you satisfied with your current job situation?				Q65
	Not at all				To a very high extent	
	1	2	3	4	5	
1	☐	☐	☐	☐	☐	

	J	Vocational education/training before your study at the VET institution	S10

	J1	Did you attend any vocational training/post-secondary school courses before your study at the VET institution?	Q66
1	☐	Yes	
2	☐	***No → Please continue with question J3***	

	J2	Please specify the vocational training/post-secondary school courses.	Q67
1		.....	

	J3	Were you employed before your study at the VET institution?	Q68
1	☐	Yes	
2	☐	No	

	K	Further VET or higher education after study at the VET institution	S11

	K1	Have you started a <u>further or another course of studies</u> after the study at the VET institution?	Q70
1	☐	Yes, I have completed it successfully	
2	☐	Yes, I am still studying	
3	☐	Yes, I have stopped my further course of studies	
4	☐	No, I have not started a further course of studies → **Please continue with question L1**	

	K2	Please specify the (major-)subjects of your further studies.	Q71
1		.....	
2		.....	
3		.....	

	L	Further vocational/professional training	S12

	L1	Have you continued professional training <u>after completing your VET studies</u>?	Q77
1	☐	Yes, I have completed it successfully	
2	☐	Yes, I am still studying	
3	☐	Yes, I have stopped my further course of studies	
4	☐	No, I have not started a further professional training	

	L2	In which topics did you receive further professional training? Multiple answers possible.	Q78
1	☐	Reinforcement of technical basic knowledge and skills	
2	☐	Workplace-oriented technical knowledge	
3	☐	EDP-application	
4	☐	Personnel management	
5	☐	Finance management	
6	☐	Contact with other persons (sales seminar/courses on group dynamics)	
7	☐	Preparation for management functions	
8	☐	Other (please specify):	

	M	Demographic information	S13
		Please provide details about yourself in order to enable us to interpret your work biography as accurately as possible.	EX3

	M1	What is your gender?	Q81
1	☐	Male	
2	☐	Female	

	M2	In which year were you born?	Q82
1	☐☐☐☐	Year of birth	

	N	Migration and regional mobility	S14

	N1	In which country were you born?	Q85
1	☐	XXX (according the country of the VET institution)	
2	☐	Other (please specify):	

	N5	What is your country of residence?	Q89
1	☐	XXX (according the country of the VET institution)	
2	☐	Other country (please specify):	

	O	Your comments and recommendations	S15

		Please share further comments and recommendations about your higher/tertiary education institution/study programme in this part.	EX4

	O2	Was there anything did you not like about your study?	Q92
1		.....	
2		.....	
3		.....	

	O3	What important changes would you recommend for your VET institution/study programme?	Q93
1		.....	
2		.....	
3		.....	

	O5	What comments/suggestions regarding this questionnaire would you like to make?	Q95
1		.....	
2		.....	
3		.....	

Thank you very much for completing the questionnaire!

ANNEX 2.
Questionnaire modules for a TVET tracer study

Name of the VET Institution

Survey of Graduates of the year 2012

Dear Graduates,

As head of the research group, I kindly request your participation in a survey of graduates who completed their studies in 2012.

We would like to find out what happened to you after you completed your studies. Did you find a job or are you still looking for a job, did your studies prepare you well for the workplace, and do you use the knowledge and skills you have learned during your studies?

The core objectives of the survey are mainly to improve the study programmes and, more specifically, to revise the curricula.

Your information will be treated in strict confidence. The results will be published in such a way that identification of individual persons is excluded.

Results of this survey will be published on the website of the institution (http://XXX.YYY.XX). On your request we will send you a printed version of the report with the main results of the survey.

Please return the completed questionnaire as soon as possible to the address mentioned below.

Thank you very much in advance for your kind support.

Mr. XXX
(Project leader of the XXX graduate survey team)

Send the questionnaire to:

Name:	**XXX**
Postal address:	**XXX**
Phone:	**XXX**
E-mail:	**XXX**

Logo and image of the VET institution

Explanatory Notes

How long does it take to fill in the questionnaire?

Most of you will need about half an hour, depending on the kind of experiences you have undergone during recent years.

We have developed a highly standardised questionnaire, which mainly asks you to mark boxes which refer to relevant answers. With this approach we hope that we have made it easy for you to answer the questions.

How to answer the questions

Please answer all questions applicable to you. In some cases, you will note that the questionnaire suggests you disregard some questions not applicable to you (e.g. → **Please continue with question B7***).*

Since the questionnaire will be captured with the help of a scanner, please fill it in legibly.

Please mark the most appropriate answer like this → ☒

Example of a 5-point-scale

In some questions we have employed answer scales from 1 to 5 (e.g. 1 = very bad to 5 = very good).

→ *Mark only one box for each item (row).*

→ *If you would like to correct your answer, make the wrong one black and mark and underscore the right one*

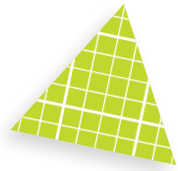
	A7					**To what extent were the following reasons important for your decision to study at the VET institution?** *Please respond to each factor on the five-point scale.*
	Not at all important				Very important	
	1	2	3	4	5	
1	☒	☐	☐	☐	☐	Vicinity to home of parents or other relatives
2	☐	☒	☐	☐	☐	Availability of scholarship
3	☐	☐	☒	☒	☐	Availability/quality of accommodation

Open answers

Sometimes we leave space for you to write an answer (……). If the space for your replies is not sufficient, please include an additional sheet of paper.

Your help to improve the survey is welcome

This questionnaire is used in different VET institutions with a wide range of different fields of study. We could not take into consideration every specific detail of study and work which might be relevant for the survey. Therefore we would appreciate your comments and additional information.



	A	The course of studies at the VET institution	S1
		In this section please refer in your answers only to the studies that you finished in 2012 at the VET institution. *If you acquired more than one degree at the VET institution, please refer to the degree (or course of studies) which is most important to you.*	EX1

	A1	At which VET institution did you complete your vocational study?	Q1
1	☐	XXX	
2	☐	YYY	
3	☐	ZZZ	

	A2	Did you predominantly study part-time?	Q2
1	☐	Yes	
2	☐	No	

	A3	When did finish your study at the VET institution?	Q3
1	☐	January 2012	
2	☐	February 2012	
3	☐	March 2012	
4	☐	April 2012	
5	☐	May 2012	
6	☐	June 2012	
7	☐	July 2012	
8	☐	August 2012	
9	☐	September 2012	
10	☐	October 2012	
11	☐	November 2012	
12	☐	December 2012	

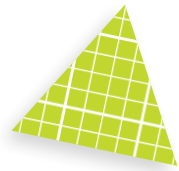
	A4	Which qualification did you achieve at the VET institution?	Q4
1	☐	Certificate	
2	☐	Diploma	
3	☐	Other (please specify):	

	A5	What was the name of the study programme at the VET institution?	Q5
1		.....	

	A6	How many months did you study at the VET institution?	Q6
1	☐	Less than 6 months	
2	☐	6 months to less than 12 months	
3	☐	12 months to less than 18 months	
4	☐	18 months to less than 24 months	
5	☐	24 months or more	
6	☐	Other (please specify):	

	A7	To what extent were the following reasons important for your decision to study at the VET institution? Please respond to each factor on the five-point scale.					Q7
	Not at all important				Very important		
	1	2	3	4	5		
1	☐	☐	☐	☐	☐	Vicinity to home of parents or other relatives	
2	☐	☐	☐	☐	☐	Availability of scholarship	
3	☐	☐	☐	☐	☐	Availability/quality of accommodation	
4	☐	☐	☐	☐	☐	Attractiveness of town/state/region	
5	☐	☐	☐	☐	☐	Reputation of the VET institution	
6	☐	☐	☐	☐	☐	Practice-oriented study programme	
7	☐	☐	☐	☐	☐	Areas of specialisation provided, if applicable	
8	☐	☐	☐	☐	☐	Advice from parents/relatives	

	A8	Who was responsible for paying for your studies? Multiple answers possible.	Q8
1	☐	Parent(s)	
2	☐	Guardian(s) (other than biological parent(s))	
3	☐	Self (own savings/personal loan/own income)	
4	☐	Employer (private company)	
5	☐	Government loan	
6	☐	Bursary	
7	☐	Other (please specify):	



	A9	During the course of your studies, have you ever seriously considered cancelling your study?	Q9
1	☐	Yes	
2	☐	No → **Please continue with question A11**	

	A10	Please specify why you considered cancelling your study at the VET institution.	Q10
1		.....	
2		.....	
3		.....	
4		.....	

	A11	On average, how many hours per week did you spend attending courses/classes during the course of your study?	Q11
1	☐	Up to 10 hours	
2	☐	11 to 19 hours	
3	☐	20 to 29 hours	
4	☐	30 to 39 hours	
5	☐	40 to 49 hours	
6	☐	50 hours or more	

	A12	On average, how many hours per week did you spend on study activities outside of courses/classes during the course of your study?	Q12
1	☐	Up to 10 hours	
2	☐	11 to 19 hours	
3	☐	20 to 29 hours	
4	☐	30 to 39 hours	
5	☐	40 to 49 hours	
6	☐	50 hours or more	

	B	Internship and work experience during course of studies at the VET institution	S2

	B1	Did you do any internships during your course of studies (this does not refer to team projects, practical courses etc.)?	Q13
1	☐	Yes	
2	☐	No → **Please continue with question B5**	

	B2	How many mandatory internships did you do in total during your course of studies?	Q14
1	☐	One mandatory internship	
2	☐	Two mandatory internships	
3	☐	Three mandatory internships	
4	☐	Four or more mandatory internships	

	B3	How many voluntary internships did you do in total during your course of studies?	Q15
1	☐	One voluntary internship	
2	☐	Two voluntary internships	
3	☐	Three voluntary internships	
4	☐	Four or more voluntary internships	

	B4	How many weeks did these internships last?	Q16
1	☐	Up to one week	
2	☐	Two weeks	
3	☐	Three weeks	
4	☐	Four weeks	
5	☐	More than four weeks	

	B5	Were you employed during your study? Please include full-time as well as part-time work; do not include internships.	Q17
1	☐	Yes	
2	☐	No → **Please continue with question C1**	

	B6	For how many months were you employed during your study? Please include full-time as well as part-time work; do not include internships.	Q18
1	☐	Less than 1 month	
2	☐	1 to 6 months	
3	☐	7 to 12 months	
4	☐	13 to 24 months	
5	☐	More than 24 months	

	C	Evaluation of study conditions and study provisions at the VET institution	S3

	C1	To what extent were the following aspects of teaching and learning stressed in your studies?	Q19

	Not at all				To a very high extent	
	1	2	3	4	5	
1	☐	☐	☐	☐	☐	Group work
2	☐	☐	☐	☐	☐	E-learning
3	☐	☐	☐	☐	☐	Lectures
4	☐	☐	☐	☐	☐	Internships and practical training
5	☐	☐	☐	☐	☐	Practical knowledge
6	☐	☐	☐	☐	☐	Theories and paradigms
7	☐	☐	☐	☐	☐	Project- and/or problem-oriented learning
8	☐	☐	☐	☐	☐	Written work
9	☐	☐	☐	☐	☐	Oral presentations by students
10	☐	☐	☐	☐	☐	Self-study activities
11	☐	☐	☐	☐	☐	Teaching staff as main source of information
12	☐	☐	☐	☐	☐	Evaluation of courses by students
13	☐	☐	☐	☐	☐	Choice of courses by students
14	☐	☐	☐	☐	☐	Respectful communication between teachers and students
15	☐	☐	☐	☐	☐	Enhancement of student motivation
16	☐	☐	☐	☐	☐	Enhancement of student self-learning abilities

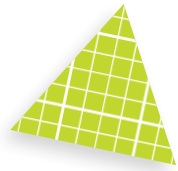
	C2	How would you rate the study conditions and provisions you experienced at the VET institution?				Q20
	Very bad				Very good	
	1	2	3	4	5	
1	☐	☐	☐	☐	☐	Quality of classroom learning
2	☐	☐	☐	☐	☐	Student recreational facilities on campus
3	☐	☐	☐	☐	☐	Supply of learning materials (e.g. books, internet access)
4	☐	☐	☐	☐	☐	Opportunity for consultation with teaching staff
5	☐	☐	☐	☐	☐	Teaching quality of lecturers
6	☐	☐	☐	☐	☐	Teaching/grading system
7	☐	☐	☐	☐	☐	Internship programme
8	☐	☐	☐	☐	☐	Contacts with fellow students
9	☐	☐	☐	☐	☐	Chances for students to have an influence on VET institution policies
10	☐	☐	☐	☐	☐	Availability of technical equipment (e.g. lab equipment, measuring instruments, computer lab)
11	☐	☐	☐	☐	☐	Quality of technical equipment
12	☐	☐	☐	☐	☐	Supply of teaching materials
13	☐	☐	☐	☐	☐	Quality of buildings
14	☐	☐	☐	☐	☐	Stocking of the library
15	☐	☐	☐	☐	☐	Other (please specify): .....

	C3	How do you rate the following advisory and guidance elements in your study course?				Q21
	Very bad				Very good	
	1	2	3	4	5	
1	☐	☐	☐	☐	☐	Professional advice and guidance provided by teaching staff
2	☐	☐	☐	☐	☐	Discussion of written examinations, assignments etc.
3	☐	☐	☐	☐	☐	Individual occupational advice in your field
4	☐	☐	☐	☐	☐	Individual study advice in your field

	C4	How do you rate the following elements related to employment and work in your study course?				Q22
	Very bad				Very good	
	1	2	3	4	5	
1	☐	☐	☐	☐	☐	Preparation for work
2	☐	☐	☐	☐	☐	Subject matters (teaching contents) are up to date with regards to practical requirements
3	☐	☐	☐	☐	☐	Practical experiences of teaching staff
4	☐	☐	☐	☐	☐	Relationship between theory and practice
5	☐	☐	☐	☐	☐	Practice-oriented teaching contents
6	☐	☐	☐	☐	☐	Mandatory internships
7	☐	☐	☐	☐	☐	Offers for acquisition of key competencies
8	☐	☐	☐	☐	☐	Support for employment/job search
9	☐	☐	☐	☐	☐	Support with internship search

	C5	What kind of connections/contacts do you have with the VET institution? Multiple answers possible.	Q23
1	☐	Newsletter	
2	☐	Graduate meetings	
3	☐	Foundation/support of a graduates' association	
4	☐	Stimulation of professional cooperation	
5	☐	Help regarding professional and social problems	
6	☐	I have no contacts with the VET institution	
7	☐	Other (please specify):	

	C6	What kind of connections/contacts do you wish to have with the VET institution? Multiple answers possible.	Q24
1	☐	Newsletter	
2	☐	Graduate meetings	
3	☐	Foundation/support of a graduates' association	
4	☐	Stimulation of professional cooperation	
5	☐	Help regarding professional and social problems	
6	☐	I don't want to have contacts with the VET institution	
7	☐	Other (please specify):	

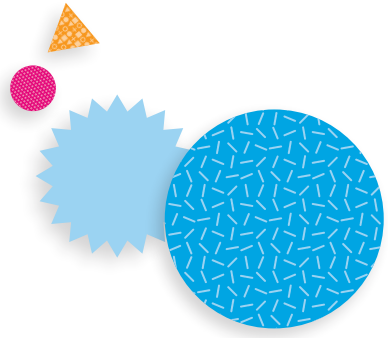


	D	Competencies and satisfaction with study					S4

	D1	To what extent did you acquire the following skills/competencies upon graduation?					Q25
	Not at all				To a very high extent		
	1	2	3	4	5		
1	☐	☐	☐	☐	☐	Mastery of my field/subject-specific knowledge	
2	☐	☐	☐	☐	☐	Ability to develop new ideas and solutions	
3	☐	☐	☐	☐	☐	Ability to assert my authority	
4	☐	☐	☐	☐	☐	Ability to adapt to changing conditions	
5	☐	☐	☐	☐	☐	Ability to mobilise the capacities of others	
6	☐	☐	☐	☐	☐	Analytical thinking	
7	☐	☐	☐	☐	☐	Willingness to question my and others' ideas	
8	☐	☐	☐	☐	☐	Ability to work efficiently towards a goal	
9	☐	☐	☐	☐	☐	Ability to organise my work processes efficiently	
10	☐	☐	☐	☐	☐	Ability to work productively with others	
11	☐	☐	☐	☐	☐	Ability to perform well under pressure	

	D2	Looking back, if you were free to choose again to what extent would you probably choose the same field of study?					Q26
	Not at all				To a very high extent		
1	1	2	3	4	5		
2	☐	☐	☐	☐	☐		

	D3	Looking back, if you were free to choose again to what extent would you probably choose the same VET institution?					Q27
	Not at all				To a very high extent		
1	1	2	3	4	5		
2	☐	☐	☐	☐	☐		



	D4	In retrospect, to what extent are you satisfied with your studies in general?				Q28
	Not at all				To a very high extent	
	1	2	3	4	5	
1	☐	☐	☐	☐	☐	

	E	After graduation from the VET institution	S5

	E1	What applied to your situation in the first six months after graduating? Multiple answers possible.	Q29
1	☐	Employment	
2	☐	Self-employed/freelance work	
3	☐	Occasional job (just to earn money)	
4	☐	Internship	
5	☐	Further academic education (higher education)	
6	☐	Further vocational education/training	
7	☐	Housewife, househusband, family work	
8	☐	Not employed, but searching for a job	
9	☐	Military or civil service	
10	☐	Other (please specify):	

	E2	When did you start your first job after graduation?	Q30
1	☐	Before graduation	
2	☐	At the time of graduation	
3	☐	Less than 1 month after graduation	
4	☐	1 to less than 3 months after graduation	
5	☐	3 to less than 6 months after graduation	
6	☐	6 to less than 9 months after graduation	
7	☐	9 to less than 12 months after graduation	
8	☐	More than one year after graduation	
9	☐	I have never been employed since graduation	

	E3	How did you search for your first job after graduation? Multiple answers possible.	Q31
1	☐	Replied to job ads/announcements (e.g. newspaper, internet, notice)	
2	☐	With the help of family contacts of parents, relatives	
3	☐	With help of personal contacts of friends, fellow students etc.	
4	☐	Speculative application – independent contact with employers	
5	☐	Through internships during my course of studies	
6	☐	Through internships after graduation	
7	☐	Through (side) jobs during study	
8	☐	Through (side) jobs after graduation	
9	☐	I was contacted by an employer	
10	☐	Job fair	
11	☐	Through the public job centre	
12	☐	Through private job agencies	
13	☐	Through internet (social) networks (e.g. Facebook)	
14	☐	Through the career centre of the VET institution	
15	☐	Through teaching staff at the VET institution	
16	☐	Not applicable, I have not searched for employment	
17	☐	Other (please specify):	

	E4	If you did not search for employment, what were your reasons? Multiple answers possible.	Q32
1	☐	I continued studying	
2	☐	I continued in job I had prior to studying	
3	☐	I found a job without searching	
4	☐	I became self-employed/a freelancer	
5	☐	Other (please specify):	

	If you did not search for employment → **Please continue with question J3**	FI1

	E5	When did you start searching for a job?	Q33
1	☐	Prior to graduation	
2	☐	Around the time of graduation	
3	☐	After graduation	

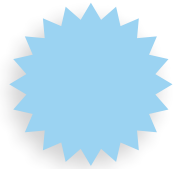
	E6	How long have you searched for your first job? Include also job search period before graduation.	Q34
1	☐	Less than 1 month	
2	☐	1 to less than 3 months	
3	☐	3 to less than 6 months	
4	☐	6 to less than 9 months	
5	☐	9 to less than 12 months	
6	☐	More than one year	

	E7	What was the most successful method for finding your first job? Choose only one answer.	Q35
1	☐	Replied to job ads/announcements (e.g. newspaper, internet, notice)	
2	☐	With the help of family contacts of parents, relatives	
3	☐	With help of personal contacts of friends, fellow students etc.	
4	☐	Speculative application – independent contact with employers	
5	☐	Through internships during my course of studies	
6	☐	Through internships after graduation	
7	☐	Through (side) jobs during study	
8	☐	Through (side) jobs after graduation	
9	☐	I was contacted by an employer	
10	☐	Job fair	
11	☐	Through the public job centre	
12	☐	Through private job agencies	
13	☐	Through internet (social) networks (e.g. Facebook)	
14	☐	Through the career centre of the VET institution	
15	☐	Through teaching staff at the VET institution	
16	☐	Not applicable, I did not find a job yet	
17	☐	Other (please specify):	

	E8	How many employers have you approached for your first employment after completion of your study programme?	Q36
1	☐	I have not approached an employer → **Please continue with question F1**	
2	☐	1 employer	
3	☐	2 to fewer than 5 employers	
4	☐	5 to fewer than 10 employers	
5	☐	10 to fewer than 20 employers	
6	☐	More than 20 employers	

	E9	From how many employers did you receive acknowledgements?	Q37
1	☐	From no employers	
2	☐	From 1 employer	
3	☐	From 2 to fewer than 5 employers	
4	☐	From 5 to fewer than 10 employers	
5	☐	From 10 to fewer than 20 employers	
6	☐	From more than 20 employers	

	E10	From how many employers did you receive calls for interviews?	Q38
1	☐	From no employers	
2	☐	From 1 employer	
3	☐	From 2 to fewer than 5 employers	
4	☐	From 5 to fewer than 10 employers	
5	☐	From 10 to fewer than 20 employers	
6	☐	From more than 20 employers	



	F	Employment and work	S6

	F1	What applies to your current situation? Multiple answers possible.	Q39
1	☐	Regular job	
2	☐	Self-employed/freelance work	
3	☐	Occasional job (just to earn money)	
4	☐	Internship	
5	☐	Further academic education (higher education)	
6	☐	Further vocational training	
7	☐	Housewife, househusband, family care	
8	☐	Not employed, but searching for a job	
9	☐	Military or civil service	
10	☐	Other (please specify):	

	F2	Since completing your study programme at the VET institution, which of the following applied to you? Multiple answers possible.	Q40
1	☐	I considered working abroad	
2	☐	I sought employment abroad	
3	☐	I received an offer to work abroad	
4	☐	I had regular employment abroad	
5	☐	I have been sent abroad by my employer on a work assignment	
6	☐	None of the above	

	F3	How many jobs (including your current one) have you had altogether since graduation?	Q41
1	☐	No job, I have never been employed since graduation	
2	☐	One job	
3	☐	Two jobs	
4	☐	Three jobs	
5	☐	More than three jobs	

		If you are currently unemployed → **Please continue with question H6**	FI2

	F4	How many hours do you work per week?	Q42
1	☐	Less than 20 hours per week	
2	☐	21 to 30 hours	
3	☐	31 to 40 hours	
4	☐	41 to 50 hours	
5	☐	More than 50 hours	

	F5	Are you permanently employed?	Q43
1	☐	Yes	
2	☐	No	
3	☐	Not applicable, I am self-employed	

	F6	How long did it take you to find your current job after completing your studies in 2012?	Q44
1	☐	Less than 1 month	
2	☐	1 to less than 3 months	
3	☐	3 to less than 6 months	
4	☐	6 to less than 9 months	
5	☐	9 to less than 12 months	
6	☐	More than one year	

	F7	How long have you been working in your current job?	Q45
1	☐	Less than 1 month	
2	☐	1 to less than 3 months	
3	☐	3 to less than 6 months	
4	☐	6 to less than 9 months	
5	☐	9 to less than 12 months	
6	☐	More than one year	

	F8	In which region are you employed?	Q46
1		.....	

	F9	What type of employer do you work for?	Q47
1	☐	Public/government	
2	☐	Parastatal	
3	☐	Private	
4	☐	Self-employed	
5	☐	Non-governmental organisation (NGO)	
6	☐	International and diplomatic	
7	☐	Other (please specify):	

	F10	In which economic sector are you currently employed (e.g. fisheries, agriculture, secondary education)?	Q48
1		.....	

	F11	What is your occupation/job title (e.g. primary school teacher)?	Q49
1		.....	

	F12	Outline the three main duties/work tasks.	Q50
1		.....	
2		.....	
3		.....	

	F13	What is your current gross monthly income?	Q51
1	☐	Less than $ 100	
2	☐	$ 100 - 150	
3	☐	$ 151 - 200	
4	☐	$ 201 - 250	
5	☐	$ 251 - 300	
6	☐	$ 300 - 350	
7	☐	$ 351 - 401	
8	☐	$ 401 - 450	
9	☐	More than $ 450	

	F14	What kind of fringe/other benefit(s) do you receive? Multiple answers possible.	Q52
1	☐	Housing (subsidy, rent allowance)	
2	☐	Transportation (car/transport allowance)	
3	☐	Health (medical aid, insurances)	
4	☐	Education and training (staff development, family study rebate)	
5	☐	Retirement (pension, gratuity)	
6	☐	None	
7	☐	Other (please specify):	

	F15	How many employees work in your company/organisation in total? Please estimate the number.	Q53
1	☐	1 to 9 employees	
2	☐	10 to 49 employees	
3	☐	50 to 99 employees	
4	☐	100 to 249 employees	
5	☐	250 to 999 employees	
6	☐	1 000 or more employees	

	F16	What is the geographical scope of your company/firm/organisation?	Q54
1	☐	Local scope	
2	☐	Regional scope	
3	☐	National scope	
4	☐	International scope	

	G	Work requirements	S7

	G1	To what extent are the following skills/competencies required in your current employment?	Q55

	Not at all				To a very high extent	
	1	2	3	4	5	
1	☐	☐	☐	☐	☐	Mastery of my field/subject-specific knowledge
2	☐	☐	☐	☐	☐	Ability to develop new ideas and solutions
3	☐	☐	☐	☐	☐	Ability to assert my authority
4	☐	☐	☐	☐	☐	Ability to adapt to changing conditions
5	☐	☐	☐	☐	☐	Ability to mobilise the capacities of others
6	☐	☐	☐	☐	☐	Analytical thinking
7	☐	☐	☐	☐	☐	Willingness to question my and others' ideas
8	☐	☐	☐	☐	☐	Ability to work efficiently towards a goal
9	☐	☐	☐	☐	☐	Ability to organise my work processes efficiently
10	☐	☐	☐	☐	☐	Ability to work productively with others
11	☐	☐	☐	☐	☐	Ability to perform well under pressure

	H	Relationship between study and employment	S8

	H1	To what extent are the knowledge and skills you acquired during study utilised in your current job?	Q56

	Not at all				To a very high extent
	1	2	3	4	5
1	☐	☐	☐	☐	☐

	H2	In your opinion, what field of study is most appropriate for your current job?	Q57
1	☐	Exclusively own field	
2	☐	Own or a related field	
3	☐	A completely different field	
4	☐	No particular field	

	H3	In your opinion, which qualification/degree level best matches your current job?	Q58
1	☐	A higher degree/qualification	
2	☐	My degree/qualification	
3	☐	A lower degree/qualification	
4	☐	No degree/qualification necessary	

	H4	To what extent is your professional position <u>appropriate</u> to your course of study?				Q59
	Not at all				To a very high extent	
	1	2	3	4	5	
1	☐	☐	☐	☐	☐	

	H5	If your job is not closely related to your course of study, why did you choose this job?	Q60
1	☐	Not applicable, my job is closely related to my course of study	
2	☐	My current job is only a temporary stepping stone, I am still searching for professional orientation	
3	☐	I have not found an appropriate job (yet)	
4	☐	I receive a higher salary in my current job	
5	☐	My current job offers more security	
6	☐	My interests have changed	
7	☐	My current job allows a flexible time schedule	
8	☐	My current job allows me to work in a favoured geographical place	
9	☐	My current job allows me to take into consideration the interests of my family/children	
10	☐	Other (please specify):	

	H6	Overall, how do you rate the usefulness of your studies?				Q61
	Not at all useful				Very useful	
	1	2	3	4	5	
1	☐	☐	☐	☐	☐	For finding an adequate job after finishing your studies
2	☐	☐	☐	☐	☐	For fulfilling your present professional tasks, if applicable
3	☐	☐	☐	☐	☐	For your future professional development/career
4	☐	☐	☐	☐	☐	For the development of your personality
5	☐	☐	☐	☐	☐	For the economic development of your country

	I	Work orientation and job satisfaction	S9

	I1	How important are the following occupational aspects for you?	Q62

	Not at all important				Very important	
	1	2	3	4	5	
1	☐	☐	☐	☐	☐	Interesting work tasks
2	☐	☐	☐	☐	☐	Work autonomy
3	☐	☐	☐	☐	☐	Clear and regulated work tasks
4	☐	☐	☐	☐	☐	Possibilities for applying acquired competencies
5	☐	☐	☐	☐	☐	Job security
6	☐	☐	☐	☐	☐	Social status and recognition
7	☐	☐	☐	☐	☐	Possibilities to realise own ideas
8	☐	☐	☐	☐	☐	Good work atmosphere
9	☐	☐	☐	☐	☐	Possibilities for further professional advancement
10	☐	☐	☐	☐	☐	High salary
11	☐	☐	☐	☐	☐	Possibility of providing social influence
12	☐	☐	☐	☐	☐	To have a challenging job
13	☐	☐	☐	☐	☐	Good career advancement prospects
14	☐	☐	☐	☐	☐	Assumption of coordination and management tasks
15	☐	☐	☐	☐	☐	Possibilities to do something useful for the general public
16	☐	☐	☐	☐	☐	Good conditions for managing both work-related and family-related issues
17	☐	☐	☐	☐	☐	Sufficient time for leisure activities

If you are not employed → **Please continue with question I3** **FI3**

	I2	To what extent do the following aspects apply to your current job situation?				Q63
	Not at all				To a very high extent	
	1	2	3	4	5	
1	☐	☐	☐	☐	☐	Interesting work tasks
2	☐	☐	☐	☐	☐	Work autonomy
3	☐	☐	☐	☐	☐	Clear and regulated work tasks
4	☐	☐	☐	☐	☐	Possibilities for applying acquired competencies
5	☐	☐	☐	☐	☐	Job security
6	☐	☐	☐	☐	☐	Social status and recognition
7	☐	☐	☐	☐	☐	Possibilities to realise own ideas
8	☐	☐	☐	☐	☐	Good work atmosphere
9	☐	☐	☐	☐	☐	Possibilities for further professional advancement
10	☐	☐	☐	☐	☐	High salary
11	☐	☐	☐	☐	☐	Possibility of providing social influence
12	☐	☐	☐	☐	☐	To have a challenging job
13	☐	☐	☐	☐	☐	Good career advancement prospects
14	☐	☐	☐	☐	☐	Assumption of coordination and management tasks
15	☐	☐	☐	☐	☐	Possibilities to do something useful for the general public
16	☐	☐	☐	☐	☐	Good conditions for managing both work-related and family-related issues
17	☐	☐	☐	☐	☐	Sufficient time for leisure activities

	I3	What changes in employment and further education/training do you plan to achieve within the next three years? Multiple answers possible.	Q64
1	☐	To change my employer	
2	☐	To obtain higher income	
3	☐	To change my area of work assignment	
4	☐	To restart full-time study	
5	☐	To study part-time	
6	☐	To start my own business	
7	☐	To get employed	
8	☐	To discontinue employment	
9	☐	To achieve more secure employment	
10	☐	To achieve better use of my knowledge	
11	☐	To obtain a better chance of pursuing continuous learning	
12	☐	To take a job more closely linked to my study	
13	☐	Other (please specify):	
14	☐	I have no major changes in mind	

	I4	To what extent are you satisfied with your current job situation?				Q65
	Not at all				To a very high extent	
	1	2	3	4	5	
1	☐	☐	☐	☐	☐	

	J	Vocational education/training before your study at the VET institution	S10

	J1	Did you attend any vocational training/post-secondary school courses before your study at the VET institution?	Q66
1	☐	Yes	
2	☐	No → **Please continue with question J3**	

	J2	Please specify the vocational training/post-secondary school courses.	Q67
1		.....	

	J3	Were you employed before your study at the VET institution?	Q68
1	☐	Yes	
2	☐	No → **Please continue with question K1**	

	J4	How long were you employed before your study at the VET institution?	Q69
1	☐	Less than 1 year	
2	☐	1 year to less than 2 years	
3	☐	2 years to less than 3 years	
4	☐	3 years to less than 4 years	
5	☐	More than less than 4 years	

	K	Further VET or higher education after study at the VET institution	S11

	K1	Have you started a <u>further or another course of studies</u> after the study at the VET institution?	Q70
1	☐	Yes, I have completed it successfully	
2	☐	Yes, I am still studying	
3	☐	Yes, I have stopped my further course of studies	
4	☐	No, I have not started a further course of studies → **Please continue with question L1**	

	K2	Please specify the (major-)subjects of your further studies.	Q71
1		.....	
2		.....	
3		.....	

	K3	Please specify the name of the institution(s) and country of your further studies.	Q72
1		.....	
2		.....	
3		.....	

	K4	Please specify the kind of (expected) degree (certificate, diploma, bachelor, master) of your further studies.	Q73
1		.....	
2		.....	
3		.....	

	K5	When did you start your course of further studies?	Q74
1	☐☐	Month of enrolment in further studies	
2	☐☐☐☐	Year of enrolment in further studies	

	K6	When did you/will you finish your course of further studies?	Q75
1	☐☐	Month of graduation from further studies	
2	☐☐☐☐	Year of graduation from further studies	

	K7	To what extent do the following reasons for further studies apply to you?					Q76
	Not at all				To a very high extent		
	1	2	3	4	5		
1	☐	☐	☐	☐	☐	Wish to achieve a higher academic or professional degree	
2	☐	☐	☐	☐	☐	Improve chances of finding a job	
3	☐	☐	☐	☐	☐	Personal interest in particular subject area	
4	☐	☐	☐	☐	☐	Demanded by my employer	
5	☐	☐	☐	☐	☐	Wish to improve my promotion prospects	
6	☐	☐	☐	☐	☐	The training is important for the development of my country	

	L	Further vocational/professional training	S12

		Please take into account all forms of further vocational education - not only participation in events/courses.	EX2

	L1	Have you continued professional training <u>after completing your VET studies</u>?	Q77
1	☐	Yes, I have completed it successfully	
2	☐	Yes, I am still studying	
3	☐	Yes, I have stopped my further course of studies	
4	☐	No, I have not started further professional training → **Please continue with question M1**	

	L2	In which topics did you receive further professional training? Multiple answers possible.	Q78
1	☐	Reinforcement of technical basic knowledge and skills	
2	☐	Workplace-oriented technical knowledge	
3	☐	EDP-application	
4	☐	Personnel management	
5	☐	Finance management	
6	☐	Contact with other persons (sales seminar/courses on group dynamics)	
7	☐	Preparation for management functions	
8	☐	Other (please specify):	

	L3	Please specify the (major-)subjects/name of the course(s) of your further studies.	Q79
1		.....	
2		.....	
3		.....	

	L4	In which topics would you like to receive further professional training if you had the opportunity to participate?	Q80
1		.....	
2		.....	
3		.....	

	M	Demographic information	S13

		Please provide details about yourself in order to enable us to interpret your work biography as accurately as possible.	EX3

	M1	What is your gender?	Q81
1	☐	Male	
2	☐	Female	

	M2	In which year were you born?	Q82
2	☐☐☐☐	Year of birth	

	M3	What is the highest level of education of your father?	Q83
1	☐	Without education	
2	☐	Incomplete primary school	
3	☐	Complete primary school	
4	☐	Junior secondary	
5	☐	Senior secondary	
6	☐	Diploma	
7	☐	Higher education degree (bachelor, master, doctorate)	
8	☐	Don't know	
9	☐	Other (please specify):	

	M4	What is the highest level of education of your mother?	Q84
1	☐	Without education	
2	☐	Incomplete primary school	
3	☐	Complete primary school	
4	☐	Junior secondary	
5	☐	Senior secondary	
6	☐	Diploma	
7	☐	Higher education degree (bachelor, master, doctorate)	
8	☐	Don't know	
9	☐	Other (please specify):	

	N	Migration and regional mobility	S14

	N1	In which country were you born?	Q85
1	☐	XXX (according the country of the VET institutions)	
2	☐	Other (please specify):	

	N2	In which country did you (mainly) attend secondary education?	Q86
1	☐	XXX (according the country of the VET institutions)	
2	☐	Other (please specify):	

	N3	Was your secondary school located in an urban or rural area?	Q87
1	☐	Urban	
2	☐	Rural	

	N4	What is your nationality?	Q88
1	☐	XXX (according the country of the VET institution)	
2	☐	Other nationality (please specify):	

	N5	What is your country of residence?	Q89
1	☐	XXX (according the country of the VET institution)	
2	☐	Other country (please specify):	

	N6	In which region of (the country of the VET institution) are you living?	Q90
1	☐	Region 1	
2	☐	Region 2	
3	☐	Region 3	
4	☐	Region 4	
5	☐	Region 5	
6	☐	Region 6	
7	☐	Other region (please specify):	

	O	Your comments and recommendations	S15
		Please share further comments and recommendations about your higher/tertiary education institution/study programme in this part.	EX4

	O1	What did you like about your study?	Q91
1		.....	
2		.....	
3		.....	

	O2	What did you not like about your study?	Q92
1		.....	
2		.....	
3		.....	

	O3	What important changes would you recommend for your VET institution/study programme?	Q93
1		.....	
2		.....	
3		.....	

	O4	What comments/suggestions regarding this survey would you like to make?	Q94
1		.....	
2		.....	
3		.....	

	O5	What comments/suggestions regarding this questionnaire would you like to make?	Q95
1		.....	
2		.....	
3		.....	

	O6	How many minutes did you need to fill in this questionnaire?	Q96
1	☐☐☐	Minutes needed to fill in the questionnaire	

	O7	How do you rate the following aspects of this questionnaire?					Q97
	Very bad				Very good		
	1	2	3	4	5		
1	☐	☐	☐	☐	☐	Length of the questionnaire	
2	☐	☐	☐	☐	☐	Clearness of the questions	
3	☐	☐	☐	☐	☐	Understandable phrasing	
4	☐	☐	☐	☐	☐	Relevance of the questions to improving the VET programme	
5	☐	☐	☐	☐	☐	Relevance of the questions to information about the labour market situation of graduates	

Thank you very much for completing the questionnaire!

ANNEX 3.
Tables report with questionnaire and codebook

Content of the tables report

A. Educational background prior to study

B. Course of study

Table 1 Major field of study, by country (%)

	Italy	Germany	UK	Japan	Total
Field of study					
Humanities	40	19	44	48	37
Sciences	17	19	25	12	18
Engineering	43	63	31	40	45
Total	100	100	100	100	100
Count	309	392	316	330	1 347

Question B1: What has been your (major) field of study?

Table 2 Time spent abroad during study period, by country (%)

	Italy	Germany	UK	Japan	Total
Time spent abroad during study period					
Yes	23	23	22	18	22
No	70	76	74	81	75
-9	7	1	3	1	3
Total	100	100	100	100	100
Count	309	392	316	330	1 347

Question B2: Did you spend any time abroad during the period of your study (in order to work or to study)?

Table 3 Emphasis on modes of teaching and learning, by country (arithmetic mean)

	Italy	Germany	UK	Japan	Total
Facts and instrumental knowledge	2.6	3.9	4.0	3.4	3.5
Theories, concepts or paradigms	3.9	3.7	4.1	3.8	3.8
Attitudes and socio-communicative skills	2.5	2.2	2.9	2.8	2.6
Independent learning	3.9	3.8	3.9	3.4	3.7
Regular class attendance	3.6	3.1	3.6	3.8	3.5
Teacher as the main source of information and understanding	3.3	3.0	3.0	2.8	3.0
Freedom to choose courses and areas of specialisation	3.3	3.3	3.5	3.5	3.4
Project and problem-based learning	2.5	2.7	3.5	3.1	2.9
Direct acquisition of work experience	1.6	2.1	2.0	2.0	1.9
Out-of-class communication between students and staff	2.1	2.2	2.8	2.4	2.4
Writing a thesis	5.0	3.8	4.1	4.2	4.2
Detailed regular assessment of academic progress	2.0	2.6	3.5	3.1	2.8
Count	309	391	314	329	1 343

Question B8: If you look back to the course of study that you graduated from in 1994 or 1995[11], to what extent were the following modes of teaching and learning emphasised by your institution of higher education and its teachers? Scale of answers from 1 = 'Not at all' to 5 = 'To a very high extent'.

Table 4 Emphasis on modes of teaching and learning, by country (%; responses 1 and 2)

	Italy	Germany	UK	Japan	Total
Facts and instrumental knowledge	52	6	7	20	20
Theories, concepts or paradigms	11	13	4	8	9
Attitudes and socio-communicative skills	52	67	38	48	52
Independent learning	10	12	6	20	12
Regular class attendance	17	29	16	11	19
Teacher as the main source of information and understanding	20	32	32	39	31
Freedom to choose courses and areas of specialisation	23	25	21	15	21
Project and problem-based learning	57	48	21	30	39
Direct acquisition of work experience	84	70	74	74	75
Out-of-class communication between students and staff	66	64	45	55	58
Writing a thesis	0	11	9	6	7
Detailed regular assessment of academic progress	72	51	19	28	43
Count	309	391	314	329	1 343

Question B8: If you look back to the course of study that you graduated from in 1994 or 1995, to what extent were the following modes of teaching and learning emphasised by your institution of higher education and its teachers? Scale of answers from 1 = 'Not at all' to 5 = 'To a very high extent'.

[11] Concerns Tracer Study of graduates 2000

Table 5 Emphasis on modes of teaching and learning, by country (%; responses 4 and 5)

	Italy	Germany	UK	Japan	Total
Facts and instrumental knowledge	21	70	70	50	54
Theories, concepts or paradigms	69	61	77	65	68
Attitudes and socio-communicative skills	21	10	32	27	22
Independent learning	68	65	69	43	61
Regular class attendance	54	38	59	66	53
Teacher as the main source of information and understanding	40	29	28	23	30
Freedom to choose courses and areas of specialisation	47	46	55	56	51
Project and problem-based learning	22	23	53	33	32
Direct acquisition of work experience	9	11	15	9	11
Out-of-class communication between students and staff	14	16	27	15	18
Writing a thesis	100	69	79	81	81
Detailed regular assessment of academic progress	12	24	52	37	31
Count	309	391	314	329	1 343

Question B8: If you look back to the course of study that you graduated from in 1994 or 1995, to what extent were the following modes of teaching and learning emphasised by your institution of higher education and its teachers? Scale of answers from 1 = 'Not at all' to 5 = 'To a very high extent'.

Table 6 Rating of study provisions and conditions, by country (arithmetic mean)

	Italy	Germany	UK	Japan	Total
Academic advice offered in general	2.3	3.0	3.5	3.4	3.1
Assistance/advice for your final examination	3.0	3.2	3.5	3.9	3.4
Course content of major	3.4	3.4	4.0	3.7	3.6
Variety of courses offered	3.5	3.4	3.8	3.2	3.5
Design of degree programme	2.7	3.2	3.7	3.1	3.2
Testing/grading system	2.7	3.1	3.5	3.1	3.1
Opportunity to choose courses and areas of specialisation	3.3	3.5	3.6	3.3	3.4
Practical emphasis of teaching and learning	2.1	2.5	3.3	3.0	2.7
Teaching quality	3.3	3.4	3.7	2.7	3.3
Chances to participate in research projects	2.1	2.5	2.6	2.4	2.4
Research emphasis of teaching and learning	2.1	2.6	2.9	3.0	2.7
Provision of work placements and other work experience	1.4	2.7	2.1	2.4	2.2
Opportunity for out-of-class contacts with teaching staff	2.3	2.4	2.9	2.8	2.6
Contacts with fellow students	3.8	4.1	3.9	3.3	3.8
Chance for students to have an impact on university policies	2.0	2.6	2.6	2.3	2.4
Equipment and stocking of libraries	2.9	3.4	3.6	3.5	3.4
Supply of teaching material	2.6	3.1	3.4	3.2	3.1
Quality of technical equipment (e.g. PC, measuring instruments, etc.)	2.2	3.0	3.4	3.0	2.9
Count	308	390	314	330	1 342

Question B9: How do you rate the study provisions and study conditions you experienced in the course of study that you graduated from in 1994 or 1995? Scale of answers from 1 = 'Very bad' to 5 = 'Very good'.

Table 7 Rating of study provisions and conditions, by country (%; responses 1 and 2)

	Italy	Germany	UK	Japan	Total
Academic advice offered in general	57	34	11	18	30
Assistance/advice for your final examination	37	26	16	12	23
Course content of major	10	9	4	8	8
Variety of courses offered	13	14	11	28	17
Design of degree programme	38	18	10	26	23
Testing/grading system	40	26	11	18	24
Opportunity to choose courses and areas of specialisation	23	17	20	23	21
Practical emphasis of teaching and learning	70	52	19	30	43
Teaching quality	16	13	6	43	20
Chances to participate in research projects	70	57	52	55	58
Research emphasis of teaching and learning	68	48	36	29	45
Provision of work placements and other work experience	91	47	69	58	65
Opportunity for out-of-class contacts with teaching staff	59	59	38	44	51
Contacts with fellow students	11	5	11	22	12
Chance for students to have an impact on university policies	69	44	48	57	54
Equipment and stocking of libraries	32	20	19	22	23
Supply of teaching material	48	25	15	21	27
Quality of technical equipment (e.g. PC, measuring instruments, etc.)	63	31	21	36	37
Count	308	390	314	330	1 342

Question B9: How do you rate the study provisions and study conditions you experienced in the course of study that you graduated from in 1994 or 1995? Scale of answers from 1 = 'Very bad' to 5 = 'Very good'.

Table 8 Rating of study provisions and conditions, by country (%; responses 4 and 5)

	Italy	Germany	UK	Japan	Total
Academic advice offered in general	12	32	51	47	36
Assistance/advice for your final examination	40	44	53	71	52
Course content of major	47	47	75	65	58
Variety of courses offered	49	50	64	38	50
Design of degree programme	17	36	58	30	35
Testing/grading system	21	36	54	23	34
Opportunity to choose courses and areas of specialisation	45	53	58	46	51
Practical emphasis of teaching and learning	9	20	41	27	24
Teaching quality	40	46	60	15	40
Chances to participate in research projects	10	26	26	14	19
Research emphasis of teaching and learning	14	28	34	27	26
Provision of work placements and other work experience	3	26	19	18	17
Opportunity for out-of-class contacts with teaching staff	21	21	33	29	26
Contacts with fellow students	61	78	73	46	65
Chance for students to have an impact on university policies	9	13	20	9	13
Equipment and stocking of libraries	28	50	61	58	49
Supply of teaching material	19	37	44	36	34
Quality of technical equipment (e.g. PC, measuring instruments, etc.)	15	35	51	38	35
Count	308	390	314	330	1 342

Question B9: How do you rate the study provisions and study conditions you experienced in the course of study that you graduated from in 1994 or 1995? Scale of answers from 1 = 'Very bad' to 5 = 'Very good'.

C. Job search and sequence of professional activities

Table 9 Job search since graduation, by country (%; multiple answers)

	Italy	Germany	UK	Japan	Total
Job search since graduation					
Yes, I sought a job since graduation	79	71	83	73	76
No, I set up my own business/self-employment	4	2	2	0	2
No, I continued the job I had before graduation	10	4	7	2	5
No, I continued to study	8	8	7	19	11
No, I obtained work without actually searching	8	19	6	4	10
Other	4	3	4	2	3
Total	113	108	109	100	107
Count	304	381	314	329	1 328

Question C1: Have you ever sought a job since graduation in 1994 or 1995? Exclude applications for casual and vacation jobs.

Table 10 Methods of job search, by country (%; multiple answers)

	Italy	Germany	UK	Japan	Total
Methods of job search					
I applied for an advertised vacancy	48	79	67	76	68
I contacted employers without knowing about a vacancy	76	64	38	17	49
I launched advertisements by myself	13	11	2	1	7
I was approached by an employer	22	15	7	7	13
I contacted a public employment agency	42	50	25	12	32
I contacted a commercial employment agency	16	7	23	13	15
I enlisted the help of the careers/placement office of my institution of higher education	8	13	37	64	30
I enlisted the help of teaching staff of the institution of higher education	16	10	8	29	16
I established contacts while working during the course of study	14	27	15	3	15
I used other personal connections/contacts (e.g. parents, relatives, friends)	52	31	26	24	33
I started my own business/self-employment	9	8	2	0	5
Other	8	8	6	10	8
Total	325	322	256	257	290
Count	233	266	252	238	989

Question C4: How did you try to find the first job after graduation? Multiple reply possible.

Table 11 Most important method for getting first job after graduation, by country (%)

	Italy	Germany	UK	Japan	Total
Most important method for getting the first job after graduation					
I applied for an advertised vacancy	13	33	42	37	32
I contacted employers without knowing about a vacancy	20	24	12	2	14
I launched advertisements by myself	0	0	0	0	0
I was approached by an employer	6	4	4	2	4
I contacted a public employment agency	0	2	3	3	2
I contacted a commercial employment agency	1	0	8	4	4
I enlisted the help of the careers/placement office of my institution of higher education	1	1	6	19	7
I enlisted the help of teaching staff of the institution of higher education	4	5	2	11	6
I established contacts while working during the course of study	7	9	6	0	6
I used other personal connections/contacts (e.g. parents, relatives, friends)	30	12	12	15	17
I started my own business/self-employment	6	4	1	0	3
Other	10	5	3	7	6
Total	100	100	100	100	100
Count	201	251	229	227	908

Question C5: Which method was the most important for getting your first job after graduation in 1994 or 1995? Please fill in the item number from question C4.

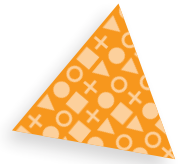


Table 12 Number of employers contacted before first job after graduation, by country (means)

	Italy	Germany	UK	Japan	Total
Number of employers contacted					
Arithmetic mean	15	34	31	16	25
Median	5	19	10	6	10
Standardabw.	25	50	73	24	49
Minimum	1	1	1	1	1
Maximum	200	400	876	200	876
Count	175	233	209	219	836

Question C6: How many employers did you contact (e.g. by letter) before you took up your first job after graduation in 1994 or 1995?

Table 13 Duration of job search for first job after graduation, by country (means)

	Italy	Germany	UK	Japan	Total
Duration of job search					
Arithmetic mean	9	6	5	6	6
Median	6	4	3	5	5
Standardabw.	8	6	4	5	6
Minimum	1	1	1	1	1
Maximum	48	48	24	36	48
Count	183	228	165	222	798

Question C7: Fow many months did you seek altogether (before or after graduation) your first job after graduation in 1994 or 1995, which you consider not to be a casual job?

D. Employment and work

Table 14 Kind of major activity four years after graduation, by country (%)

	Italy	Germany	UK	Japan	Total
Kind of major activity					
Employed	60	80	74	85	75
Self-employed	21	7	6	2	9
Not employed, seeking employment	5	2	3	3	3
Professional training	4	1	2	1	2
Advanced academic study	6	4	13	5	7
Child rearing, family care	3	3	1	4	3
Other	1	2	1	1	1
Total	100	100	100	100	100
Count	302	390	305	328	1 325

Question C10A: What is your current major activity?

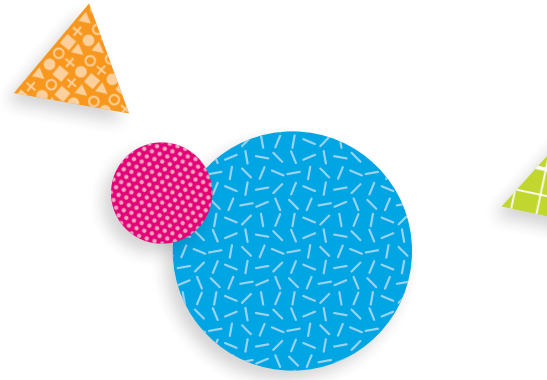


Table 15 Full-time employment, by country (%)

	Italy	Germany	UK	Japan	Total
Full-time or part-time activity					
Full-time	78	88	96	96	90
Part-time	22	12	4	4	10
Total	100	100	100	100	100
Count	238	341	269	268	1 116

Question C10B: Are you full-time or part-time employed?

Table 16 Type of contract, by country (%)

	Italy	Germany	UK	Japan	Total
Type of contract					
Permanent	74	77	87	87	82
Temporary	26	23	13	13	18
Total	100	100	100	100	100
Count	171	306	244	275	996

Question C10C: Do you have a permanent or temporary contract?

Table 17 Level of occupation, by country (%)

	Italy	Germany	UK	Japan	Total
Level of occupation					
Senior manager	3	3	21	5	8
Professional	62	83	57	50	64
Technician	27	12	13	3	13
Clerk	5	1	5	29	10
Service worker	3	0	3	10	4
Skilled agricultural worker	0	1	0	1	0
Craft and related	0	0	0	1	0
Plant and machine	0	0	0	2	1
Elementary occupation	0	0	0	0	0
Total	100	100	100	100	100
Count	239	297	246	256	1 038

Question C10D: What is your job title?

Table 18 Current professional situation, by country (%; multiple answers)

	Italy	Germany	UK	Japan	Total
Current professional situation					
I have regular employment/I am self-employed	66	93	95	84	85
I have casual jobs related to my study	21	7	3	5	9
I have casual jobs not related to my study	5	1	1	8	4
I have more than one job	11	5	2	4	5
I am currently doing military or civilian service	0	0	0	0	0
Other	9	3	2	5	4
Total	112	108	102	105	107
Count	273	360	259	292	1 184

Question D1: If you are currently employed/self-employed, how would you describe your current professional situation? Multiple answers possible.

Table 19 Kind of current employer/institution, by country (%)

	Italy	Germany	UK	Japan	#Total
Kind of current employer/institution					
Public employer	22	28	27	20	24
Non-profit organisation	2	1	4	1	2
Private employer	55	59	60	74	62
Self-employed	20	8	5	1	8
Other	2	4	3	4	3
Total	100	100	100	100	100
Count	259	358	260	279	1 156

Question D4: Please state the kind of your current employer/institution (if several, please refer to main employer). Please mark one single item only.

Table 20 Economic sector of current work, by country (%)

	Italy	Germany	UK	Japan	Total
Economic sector					
Production	42	47	35	55	45
Business	30	27	35	22	28
Public admin.	8	4	8	11	7
Education	20	23	22	13	20
Total	100	100	100	100	100
Count	250	301	260	263	1 074

Question D5: In which economic sector are you currently working?

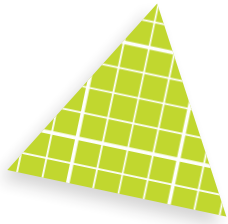


Table 21 Size of company, by country (means)

	Italy	Germany	UK	Japan	Total
Number of people in the location where you currently work					
Arithmetic mean	141	1 333	909	441	786
Median	20	100	100	60	58
Standardabw.	558	5 320	5 330	1 423	4 096
Minimum	1	1	1	1	1
Maximum	6 000	48 000	80 200	15 000	80 200
Count	191	320	241	238	990
Number of people in the entire organisation if there is more than one location					
Arithmetic mean	3 279	45 680	12 346	4 237	18 547
Median	100	3 200	3 000	850	1 000
Standardabw.	12 406	110 912	20 073	10 115	65 038
Minimum	1	1	1	3	1
Maximum	80 000	900 000	90 000	80 000	900 000
Count	86	206	145	236	673

Question D9: Please estimate, to the best of your ability, the approximate number of people who are working in...

Table 22 Annual gross income (including extra payments and second jobs), by country (means)

	Italy	Germany	UK	Japan	Total
Annual gross income					
Arithmetic mean	18	36	31	28	29
Median	15	36	27	29	29
Standardabw.	17	13	18	10	16
Minimum	1	3	2	1	1
Maximum	158	87	150	69	158
Count	208	340	249	272	1 069

Question D11: What is your approximate annual gross income (thousands)?

E. Acquired competencies and work requirements

Table 23 Competencies at time of graduation, by country (arithmetic mean)

	Italy	Germany	UK	Japan	Total
Broad general knowledge	3.8	3.6	3.7	3.2	3.6
Cross-disciplinary thinking/knowledge	3.5	3.5	3.6	3.0	3.4
Field-specific theoretical knowledge	3.7	3.9	3.8	3.4	3.7
Field-specific knowledge of methods	3.4	3.5	3.5	3.2	3.4
Foreign language proficiency	3.0	3.1	2.1	2.7	2.7
Computer skills	2.6	3.2	3.3	2.7	3.0
Understanding complex social, organisational and technical systems	2.3	3.1	2.8	2.5	2.7
Planning, coordinating and organising	2.9	3.1	3.4	2.5	3.0
Applying rules and regulations	2.4	2.8	3.2	2.8	2.8
Economic reasoning	2.4	2.5	2.7	2.4	2.5
Documenting ideas and information	3.3	3.2	3.8	3.0	3.3
Problem-solving ability	3.5	3.6	3.9	3.2	3.6
Analytical competencies	3.8	3.8	3.9	3.3	3.7
Learning abilities	4.3	4.1	4.2	3.5	4.0
Reflective thinking, assessing one's own work	3.8	3.4	3.7	3.1	3.5
Creativity	3.7	3.4	3.4	3.1	3.4
Working under pressure	3.5	3.5	3.9	3.1	3.5
Accuracy, attention to detail	3.8	3.6	3.9	3.1	3.6
Time management	3.4	3.1	3.6	3.0	3.2
Negotiating	2.7	2.1	2.8	2.5	2.5
Fitness for work	3.5	3.6	3.4	3.4	3.5
Manual skill	3.1	3.1	2.6	3.3	3.0
Working independently	3.7	4.1	4.1	3.0	3.7
Working in a team	3.6	3.5	3.7	3.3	3.5
Initiative	3.5	3.4	3.8	3.5	3.5
Adaptability	3.7	3.4	3.8	3.6	3.6
Assertiveness, decisiveness, persistence	3.8	3.4	3.3	3.3	3.5
Power of concentration	4.0	4.0	3.9	3.7	3.9
Getting personally involved	3.9	3.7	3.5	3.7	3.7
Loyalty, integrity	4.5	3.5	3.7	3.9	3.9
Critical thinking	4.0	3.7	3.7	3.3	3.7
Oral communication skill	3.8	3.5	3.7	3.3	3.6
Written communication skill	3.8	3.7	4.1	3.2	3.7
Tolerance, appreciation of different points of view	3.8	3.6	3.7	3.4	3.6
Leadership	3.0	2.3	3.1	2.9	2.8
Taking responsibilities, decision-making	3.5	3.1	3.5	2.9	3.2
Count	303	391	311	327	1 332

Question E1A: Please state the extent to which you had the following competencies at the time of graduation in 1994 or 1995. Scale of answers from 1 = 'Not at all' to 5 = 'To a very high extent'.

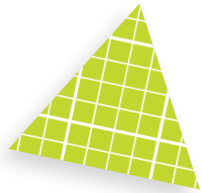


Table 24 Competencies at time of graduation, by country (%; responses 1 and 2)

	Italy	Germany	UK	Japan	Total
Broad general knowledge	1	9	7	24	10
Cross-disciplinary thinking/knowledge	10	11	11	29	15
Field-specific theoretical knowledge	11	5	13	20	12
Field-specific knowledge of methods	21	14	18	27	20
Foreign language proficiency	35	31	72	51	46
Computer skills	49	25	26	48	36
Understanding complex social, organisational and technical systems	59	29	38	50	43
Planning, coordinating and organising	36	29	17	50	33
Applying rules and regulations	57	40	24	38	40
Economic reasoning	56	52	43	55	52
Documenting ideas and information	22	25	9	27	21
Problem-solving ability	12	11	5	19	12
Analytical competencies	7	7	8	17	10
Learning abilities	3	1	2	10	4
Reflective thinking, assessing one's own work	9	14	12	24	15
Creativity	13	20	17	24	18
Working under pressure	21	16	10	32	20
Accuracy, attention to detail	11	12	5	29	14
Time management	18	31	16	33	25
Negotiating	45	71	43	54	54
Fitness for work	16	12	22	21	17
Manual skill	35	31	48	25	34
Working independently	12	4	6	31	13
Working in a team	12	17	18	21	17
Initiative	15	18	9	16	15
Adaptability	11	16	8	10	11
Assertiveness, decisiveness, persistence	11	17	23	26	19
Power of concentration	6	3	6	10	6
Getting personally involved	7	9	16	8	10
Loyalty, integrity	2	20	16	5	11
Critical thinking	5	8	10	15	10
Oral communication skill	9	17	14	22	16
Written communication skill	8	8	5	24	11
Tolerance, appreciation of different points of view	9	14	11	16	13
Leadership	30	58	28	39	40
Taking responsibilities, decision-making	17	28	19	36	25
Count	303	391	311	327	1 332

Question E1A: Please state the extent to which you had the following competencies at the time of graduation in 1994 or 1995. Scale of answers from 1 = 'Not at all' to 5 = 'To a very high extent'.

Table 25 Competencies at time of graduation, by country (%; responses 4 and 5)

	Italy	Germany	UK	Japan	Total
Broad general knowledge	68	57	58	44	57
Cross-disciplinary thinking/knowledge	51	56	56	34	50
Field-specific theoretical knowledge	65	70	63	59	65
Field-specific knowledge of methods	46	54	53	44	49
Foreign language proficiency	30	35	15	30	28
Computer skills	24	41	44	33	36
Understanding complex social, organisational and technical systems	10	34	25	17	22
Planning, coordinating and organising	30	34	48	18	32
Applying rules and regulations	17	25	38	27	27
Economic reasoning	16	19	25	14	18
Documenting ideas and information	43	38	63	34	44
Problem-solving ability	53	58	71	42	56
Analytical competencies	66	68	70	45	62
Learning abilities	85	87	83	56	78
Reflective thinking, assessing one's own work	63	47	59	36	51
Creativity	57	46	46	34	46
Working under pressure	53	53	68	38	53
Accuracy, attention to detail	60	57	70	34	55
Time management	48	32	55	34	42
Negotiating	22	6	25	19	17
Fitness for work	53	55	48	51	52
Manual skill	37	40	25	44	37
Working independently	61	76	80	35	63
Working in a team	54	54	62	48	54
Initiative	51	45	63	54	53
Adaptability	57	48	59	61	56
Assertiveness, decisiveness, persistence	65	49	41	46	50
Power of concentration	71	76	69	66	71
Getting personally involved	65	62	51	62	60
Loyalty, integrity	89	52	58	70	67
Critical thinking	75	62	62	41	60
Oral communication skill	62	49	58	46	53
Written communication skill	61	62	75	40	59
Tolerance, appreciation of different points of view	57	56	61	49	56
Leadership	33	15	36	26	27
Taking responsibilities, decision-making	52	38	53	28	42
Count	303	391	311	327	1 332

Question E1A: Please state the extent to which you had the following competencies at the time of graduation in 1994 or 1995. Scale of answers from 1 = 'Not at all' to 5 = 'To a very high extent'.

Table 26 Work requirements, by country (arithmetic mean)

	Italy	Germany	UK	Japan	Total
Broad general knowledge	3.6	3.4	3.7	4.0	3.6
Cross-disciplinary thinking/knowledge	3.7	3.9	3.8	3.3	3.7
Field-specific theoretical knowledge	3.5	3.5	3.7	3.6	3.6
Field-specific knowledge of methods	3.7	3.6	3.7	3.5	3.6
Foreign language proficiency	3.3	3.2	1.8	3.0	2.9
Computer skills	3.7	4.0	4.2	4.0	4.0
Understanding complex social, organisational and technical systems	3.0	3.8	3.2	3.5	3.4
Planning, coordinating and organising	4.0	4.3	4.4	3.8	4.2
Applying rules and regulations	3.5	3.5	4.0	3.8	3.7
Economic reasoning	3.6	3.8	3.3	3.9	3.7
Documenting ideas and information	4.0	3.9	4.1	4.0	4.0
Problem-solving ability	4.3	4.3	4.2	4.3	4.3
Analytical competencies	4.0	3.9	4.0	4.1	4.0
Learning abilities	4.1	3.9	4.2	4.0	4.0
Reflective thinking, assessing one's own work	4.1	3.8	4.1	3.9	4.0
Creativity	3.7	3.8	3.7	3.8	3.8
Working under pressure	4.3	4.2	4.6	4.2	4.3
Accuracy, attention to detail	4.1	4.1	4.5	4.2	4.2
Time management	4.2	4.1	4.5	4.2	4.2
Negotiating	3.7	3.4	3.8	3.9	3.7
Fitness for work	3.7	4.2	3.8	4.3	4.0
Manual skill	3.0	2.8	2.6	3.5	3.0
Working independently	4.1	4.6	4.3	3.9	4.3
Working in a team	4.0	4.0	4.4	4.2	4.1
Initiative	4.0	4.1	4.4	4.1	4.1
Adaptability	4.2	3.8	4.4	4.2	4.1
Assertiveness, decisiveness, persistence	4.2	4.2	4.4	3.9	4.2
Power of concentration	4.1	4.1	4.2	4.2	4.1
Getting personally involved	4.0	4.2	3.9	4.0	4.0
Loyalty, integrity	4.1	4.0	4.1	4.1	4.1
Critical thinking	3.9	3.7	3.9	3.7	3.8
Oral communication skill	4.2	4.2	4.5	4.2	4.3
Written communication skill	3.8	4.0	4.3	3.9	4.0
Tolerance, appreciation of different points of view	4.1	3.8	4.1	4.0	4.0
Leadership	3.5	3.5	3.9	3.6	3.6
Taking responsibilities, decision-making	4.1	4.2	4.4	3.8	4.1
Count	257	359	280	285	1 181

Question E1B: To what extent are the following competencies required in your current work. Scale of answers from 1 = 'Not at all' to 5 = 'To a very high extent'.

Table 27 Work requirements, by country (%; responses 1 and 2)

	Italy	Germany	UK	Japan	Total
Broad general knowledge	14	18	13	10	14
Cross-disciplinary thinking/knowledge	15	8	13	21	14
Field-specific theoretical knowledge	20	21	20	23	21
Field-specific knowledge of methods	17	18	22	24	20
Foreign language proficiency	32	32	80	43	46
Computer skills	18	9	7	9	10
Understanding complex social, organisational and technical systems	32	8	26	16	19
Planning, coordinating and organising	9	4	3	11	7
Applying rules and regulations	21	17	8	9	14
Economic reasoning	20	15	27	11	18
Documenting ideas and information	10	8	7	7	8
Problem-solving ability	2	2	6	3	3
Analytical competencies	7	6	8	6	7
Learning abilities	4	6	5	6	5
Reflective thinking, assessing one's own work	4	7	8	6	7
Creativity	17	10	16	15	14
Working under pressure	4	4	1	6	4
Accuracy, attention to detail	5	4	1	4	3
Time management	3	5	2	5	4
Negotiating	19	24	15	13	18
Fitness for work	14	1	9	2	6
Manual skill	40	38	51	22	38
Working independently	5	1	3	11	5
Working in a team	7	8	4	6	6
Initiative	9	4	3	4	5
Adaptability	7	6	1	2	4
Assertiveness, decisiveness, persistence	4	3	2	8	4
Power of concentration	4	3	4	2	3
Getting personally involved	5	3	10	4	5
Loyalty, integrity	11	6	8	7	8
Critical thinking	9	13	9	12	11
Oral communication skill	5	3	1	4	3
Written communication skill	9	8	7	9	8
Tolerance, appreciation of different points of view	7	7	7	5	6
Leadership	19	21	11	16	17
Taking responsibilities, decision-making	9	3	3	13	7
Count	257	359	280	285	1 181

Question E1B: To what extent are the following competencies required in your current work. Scale of answers from 1 = 'Not at all' to 5 = 'To a very high extent'.

Table 28 Work requirements, by country (%; responses 4 and 5)

	Italy	Germany	UK	Japan	Total
Broad general knowledge	56	49	59	75	59
Cross-disciplinary thinking/knowledge	63	72	67	46	62
Field-specific theoretical knowledge	52	55	64	60	58
Field-specific knowledge of methods	61	62	61	55	60
Foreign language proficiency	47	49	11	43	38
Computer skills	61	78	81	80	75
Understanding complex social, organisational and technical systems	39	69	43	55	53
Planning, coordinating and organising	73	85	88	67	79
Applying rules and regulations	54	56	71	64	61
Economic reasoning	60	68	46	71	62
Documenting ideas and information	75	73	76	74	75
Problem-solving ability	82	90	81	84	85
Analytical competencies	75	72	71	77	74
Learning abilities	75	74	76	75	75
Reflective thinking, assessing one's own work	81	68	76	67	73
Creativity	65	68	56	61	63
Working under pressure	84	80	93	82	84
Accuracy, attention to detail	76	81	91	81	82
Time management	80	80	92	79	82
Negotiating	63	52	66	70	62
Fitness for work	57	84	66	84	74
Manual skill	41	32	28	51	38
Working independently	78	96	86	72	84
Working in a team	76	75	87	81	80
Initiative	73	82	88	80	81
Adaptability	81	66	89	82	79
Assertiveness, decisiveness, persistence	80	82	84	69	79
Power of concentration	72	79	81	81	78
Getting personally involved	71	84	65	70	73
Loyalty, integrity	73	74	76	71	74
Critical thinking	68	66	68	62	66
Oral communication skill	79	83	92	80	84
Written communication skill	60	77	83	70	73
Tolerance, appreciation of different points of view	76	70	76	77	75
Leadership	57	60	67	54	60
Taking responsibilities, decision-making	79	82	84	65	78
Count	257	359	280	285	1 181

Question E1B: To what extent are the following competencies required in your current work. Scale of answers from 1 = 'Not at all' to 5 = 'To a very high extent'.

Table 29 Utility of study, by country (arithmetic mean)

	Italy	Germany	UK	Total
Preparing for your present work tasks	3.3	3.3	3.4	3.3
Preparing for tasks in other spheres of life	3.1	2.7	3.4	3.0
Count	272	373	290	935

Question E2: To what extent has your study (from which you graduated in 1994 or 1995) been useful for...? Scale of answers from 1 = 'Not at all' to 5 = 'To a very high extent'.

Table 30 Utility of study, by country (%; responses 1 and 2)

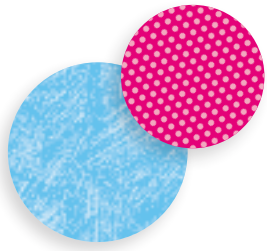
	Italy	Germany	UK	Total
Preparing for your present work tasks	23	23	20	22
Preparing for tasks in other spheres of life	27	41	20	31
Count	272	373	290	935

Question E2: To what extent has your study (from which you graduated in 1994 or 1995) been useful for...? Scale of answers from 1 = 'Not at all' to 5 = 'To a very high extent'.

Table 31 Utility of study, by country (%; responses 4 and 5)

	Italy	Germany	UK	Total
Preparing for your present work tasks	46	44	51	47
Preparing for tasks in other spheres of life	36	23	48	34
Count	272	373	290	935

Question E2: To what extent has your study (from which you graduated in 1994 or 1995) been useful for...? Scale of answers from 1 = 'Not at all' to 5 = 'To a very high extent'.



F. Relationship between higher education and work

Table 32 Use of knowledge and skills acquired in the course of study, by country (%; arithmetic mean)

	Italy	Germany	UK	Japan	Total
Use of knowledge and skills					
1 Not at all	9	3	7	17	9
2	19	23	18	29	23
3	22	33	25	27	27
4	29	28	27	15	25
5 To a very high extent	21	14	23	12	17
Total	100	100	100	100	100
Count	257	357	275	275	1 164
Recoded values					
Values 1 and 2	28	26	25	46	31
Value 3	22	33	25	27	27
Values 4 and 5	50	41	50	27	42
Arithmetic mean	3.3	3.3	3.4	2.8	3.2

Question F1: If you take into consideration your current work tasks altogether, to what extent do you use the knowledge and skills acquired in the course of study (from which you graduated in 1994 or 1995)? Scale of answers from 1 = 'Not at all' to 5 = 'To a very high extent'.

Table 33 Relationship between field of study and area of work, by country (%; multiple answers)

	Italy	Germany	UK	Japan	Total
Relationship between field of study and area of work					
My field of study is the only possible/by far the best field	45	31	37	28	35
Some other fields could prepare for the area of work as well	31	46	37	20	34
Another field would have been more useful	9	11	14	12	11
The field of study does not matter very much	6	11	20	25	15
Higher education studies are not at all related to my area of work	13	9	18	15	13
Others	2	2	1	0	1
Total	104	111	127	100	110
Count	256	359	264	279	1 158

Question F2: How would you characterise the relationship between your field of study and your area of work?

Table 34 Appropriateness of level of education for employment and work, by country (%; arithmetic mean)

	Italy	Germany	UK	Japan	Total
Appropriateness of level of education for employment and work					
1 Not at all appropriate	7	4	5	5	5
2	16	8	10	14	12
3	28	22	14	38	25
4	32	43	31	32	35
5 Completely appropriate	17	23	40	11	23
Total	100	100	100	100	100
Count	257	360	264	281	1 162
Recoded values					
Values 1 and 2	23	12	16	19	17
Value 3	28	22	14	38	25
Values 4 and 5	49	66	70	43	58
Arithmetic mean	3.3	3.7	3.9	3.3	3.6

Question F3A: If you consider all dimensions of your employment and work (status, position, income, work tasks, etc.), to what extent is your employment and work appropriate to your level of education? Scale of answers from 1 = 'Not at all appropriate' to 5 = 'Completely appropriate'.

Table 35 Most appropriate level of course of study/degree, by country (%)

	Italy	Germany	UK	Japan	Total
Most appropriate level of course of study/degree					
A higher level than the one I graduated from	9	6	19	14	11
The same level	59	68	58	51	60
A lower level of higher/tertiary education	13	18	18	18	17
No higher/tertiary education at all	16	6	4	11	9
Other	3	2	1	6	3
Total	100	100	100	100	100
Count	253	355	267	280	1 155

Question F3B: What is the most appropriate level of course of study/degree for your employment and work in comparison to that which you graduated from in 1994 or 1995?

Table 36 Reasons for taking a job not closely linked to study, by country (%; multiple answers)

	Italy	Germany	UK	Japan	Total
Reasons for taking a job not linked to study					
I have not (yet) been able to find a job more appropriate	31	17	37	22	25
In doing this job I have better career prospects	11	17	33	15	17
I prefer an occupation which is not closely connected to my studies	5	5	16	11	8
I was promoted to a position less linked to my studies than my previous position(s)	0	2	6	0	2
I can get a higher income in my current job	4	9	33	12	11
My current job offers me more security	11	10	20	36	18
My current job is more interesting	9	19	29	29	20
My current job provides the opportunity for part-time/flexible schedules etc.	14	15	13	7	12
My current job enables me to work in a locality which I prefer	6	18	27	27	18
My current job allows me to take into account family needs	12	9	10	10	10
At the beginning of the career I envisaged I would have to accept work not closely linked to my study	8	9	10	4	8
Other	4	5	16	15	8
Not applicable, I consider my job closely linked to my studies	46	49	0	13	33
Total	160	184	250	200	190
Count	227	288	105	208	828

Question F4: If you consider your employment and work as not particularly appropriate and not linked to your education: why did you take it up? Multiple answers possible.

G. Work orientations and job satisfaction

Table 37 General satisfaction with current work, by country (%; arithmetic mean)

	Italy	Germany	UK	Japan	Total
General satisfaction with current work					
1 Very dissatisfied	5	3	3	6	4
2	15	9	15	20	15
3	33	24	25	24	26
4	38	45	37	41	41
5 Very satisfied	10	19	21	8	15
Total	100	100	100	100	100
Count	258	371	272	290	1 191
Recoded values					
Values 1 and 2	20	12	18	26	18
Value 3	33	24	25	24	26
Values 4 and 5	48	64	57	49	55
Arithmetic mean	3.3	3.7	3.6	3.3	3.5

Question G1: Overall, to what extent are you satisfied with your current work? Scale of answers from 1 = 'Very dissatisfied' to 5 = 'Very satisfied'.

Table 38 Work orientations, by country (arithmetic mean)

	Italy	Germany	UK	Japan	Total
Largely independent disposition of work	4.2	4.2	3.5	3.8	3.9
Opportunity to undertake scientific/scholarly work	3.2	2.8	2.8	3.4	3.1
Clear and well-ordered tasks	3.8	3.1	3.5	3.6	3.5
Possibilities for using acquired knowledge and skills	4.2	3.8	4.4	4.2	4.1
Job security	4.0	4.1	4.1	3.8	4.0
Social recognition and status	3.1	3.1	3.1	3.1	3.1
Opportunity to pursue own ideas	4.3	4.1	3.9	4.1	4.1
Good social climate	4.4	4.5	4.2	4.4	4.4
Opportunity to pursue continuous learning	4.4	4.1	3.7	3.9	4.1
High income	3.5	3.6	3.7	3.6	3.6
Chances of (political) influence	3.4	2.4	2.2	3.0	2.7
Challenging tasks	4.1	4.0	4.2	3.8	4.0
Good career prospects	3.8	3.6	4.2	3.5	3.7
Enough time for leisure activities	4.0	3.8	4.3	4.2	4.0
Coordinating and management tasks	3.4	3.5	3.5	3.0	3.4
Possibility of working in a team	3.4	3.9	3.7	3.3	3.6
Chance to do something useful for society	3.9	3.1	3.5	3.8	3.5
Variety	3.9	4.1	4.3	4.3	4.1
Good chances to combine employment with family tasks	4.2	3.4	3.5	3.8	3.7
Count	304	389	304	327	1 324

Question G3A: How important are the following characteristics of an occupation for you personally? Scale of answers from 1 = 'Not at all important' to 5 = 'Very important'.

Table 39 Work orientations, by country (%; responses 1 and 2)

	Italy	Germany	UK	Japan	Total
Largely independent disposition of work	4	2	13	5	6
Opportunity to undertake scientific/scholarly work	30	45	43	19	35
Clear and well-ordered tasks	12	26	14	13	17
Possibilities for using acquired knowledge and skills	4	8	3	4	5
Job security	7	7	6	8	7
Social recognition and status	27	25	31	28	28
Opportunity to pursue own ideas	3	3	8	4	4
Good social climate	2	1	3	2	2
Opportunity to pursue continuous learning	3	5	16	7	8
High income	12	12	13	12	12
Chances of (political) influence	18	57	61	26	41
Challenging tasks	4	4	2	6	4
Good career prospects	13	12	3	16	11
Enough time for leisure activities	6	8	2	4	5
Coordinating and management tasks	22	14	19	23	19
Possibility of working in a team	19	4	10	16	12
Chance to do something useful for society	11	29	23	8	18
Variety	10	2	2	2	4
Good chances to combine employment with family tasks	6	23	22	9	15
Count	304	389	304	327	1 324

Question G3A: How important are the following characteristics of an occupation for you personally? Scale of answers from 1 = 'Not at all important' to 5 = 'Very important'.

Table 40 Work orientations, by country (%; responses 4 and 5)

	Italy	Germany	UK	Japan	Total
Largely independent disposition of work	82	84	53	69	73
Opportunity to undertake scientific/scholarly work	44	33	32	50	40
Clear and well-ordered tasks	63	41	51	57	52
Possibilities for using acquired knowledge and skills	80	68	90	83	80
Job security	69	78	77	70	74
Social recognition and status	37	39	38	33	37
Opportunity to pursue own ideas	85	80	71	83	80
Good social climate	88	93	81	90	88
Opportunity to pursue continuous learning	87	83	63	72	77
High income	52	56	57	62	57
Chances of (political) influence	49	15	16	27	26
Challenging tasks	80	76	83	66	76
Good career prospects	64	57	83	52	63
Enough time for leisure activities	71	69	84	79	75
Coordinating and management tasks	48	55	53	26	46
Possibility of working in a team	50	72	62	40	57
Chance to do something useful for society	66	37	50	64	54
Variety	68	81	86	87	80
Good chances to combine employment with family tasks	78	53	56	66	63
Count	304	389	304	327	1 324

Question G3A: How important are the following characteristics of an occupation for you personally? Scale of answers from 1 = 'Not at all important' to 5 = 'Very important'.

Table 41 Professional situation, by country (arithmetic mean)

	Italy	Germany	UK	Japan	Total
Largely independent disposition of work	3.5	4.1	3.5	3.5	3.7
Opportunity to undertake scientific/scholarly work	2.3	2.4	2.2	2.9	2.5
Clear and well-ordered tasks	3.3	3.0	3.4	3.2	3.2
Possibilities for using acquired knowledge and skills	3.6	3.4	3.9	3.3	3.5
Job security	3.3	3.6	3.7	3.6	3.5
Social recognition and status	2.9	3.4	3.0	3.2	3.1
Opportunity to pursue own ideas	3.3	3.7	3.3	3.3	3.4
Good social climate	3.8	3.9	3.8	3.6	3.8
Opportunity to pursue continuous learning	3.6	3.4	3.2	3.2	3.3
High income	2.5	2.9	2.9	2.9	2.8
Chances of (political) influence	2.8	2.0	2.2	2.9	2.4
Challenging tasks	3.4	4.0	3.9	3.2	3.7
Good career prospects	2.8	2.7	3.5	2.9	3.0
Enough time for leisure activities	3.0	3.1	3.4	3.1	3.1
Coordinating and management tasks	2.9	3.2	3.2	2.9	3.1
Possibility of working in a team	3.1	3.8	3.9	3.6	3.6
Chance to do something useful for society	2.8	2.7	2.9	3.4	2.9
Variety	3.2	3.9	3.7	3.5	3.6
Good chances to combine employment with family tasks	3.3	2.8	3.0	3.0	3.0
Count	254	354	268	280	1 156

Question G3B: To what extent do the following characteristics of an occupation apply to your current professional situation? Scale of answers from 1 = 'Not at all' to 5 = 'To a very high extent'.

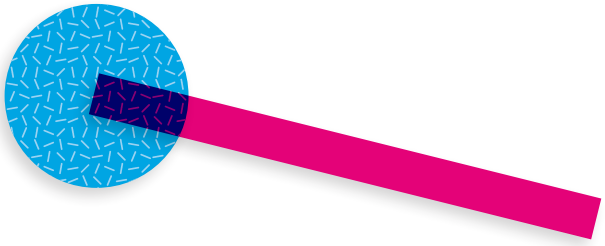


Table 42 Professional situation, by country (%; responses 1 and 2)

	Italy	Germany	UK	Japan	Total
Largely independent disposition of work	18	6	17	14	13
Opportunity to undertake scientific/scholarly work	62	63	63	36	56
Clear and well-ordered tasks	21	35	19	21	25
Possibilities for using acquired knowledge and skills	17	21	13	24	19
Job security	31	20	19	19	22
Social recognition and status	36	13	37	24	26
Opportunity to pursue own ideas	25	15	23	25	21
Good social climate	12	8	13	16	12
Opportunity to pursue continuous learning	17	24	31	29	25
High income	50	31	36	39	38
Chances of (political) influence	36	70	61	28	50
Challenging tasks	20	5	11	26	15
Good career prospects	42	44	18	30	34
Enough time for leisure activities	38	33	26	37	33
Coordinating and management tasks	41	26	30	25	30
Possibility of working in a team	32	9	12	11	15
Chance to do something useful for society	43	45	42	16	37
Variety	26	9	15	19	16
Good chances to combine employment with family tasks	26	43	34	28	34
Count	254	354	268	280	1 156

Question G3B: To what extent do the following characteristics of an occupation apply to your current professional situation? Scale of answers from 1 = 'Not at all' to 5 = 'To a very high extent'.

Table 43 Professional situation, by country (%; responses 4 and 5)

	Italy	Germany	UK	Japan	Total
Largely independent disposition of work	56	77	53	50	60
Opportunity to undertake scientific/scholarly work	23	24	19	30	24
Clear and well-ordered tasks	45	33	49	36	40
Possibilities for using acquired knowledge and skills	60	47	65	47	54
Job security	49	58	62	58	57
Social recognition and status	30	48	34	39	39
Opportunity of pursuing own ideas	46	61	45	45	50
Good social climate	66	70	65	59	65
Opportunity to pursue continuous learning	59	49	41	42	48
High income	18	31	32	32	29
Chances of (political) influence	28	10	15	23	18
Challenging tasks	52	75	69	41	60
Good career prospects	31	24	53	27	33
Enough time for leisure activities	38	36	49	47	42
Coordinating and management tasks	32	42	43	19	34
Possibility of working in a team	40	67	68	58	59
Chance to do something useful for society	29	27	35	46	34
Variety	40	69	62	55	58
Good chances to combine employment with family tasks	42	32	36	27	34
Count	254	354	268	280	1 156

Question G3B: To what extent do the following characteristics of an occupation apply to your current professional situation? Scale of answers from 1 = 'Not at all' to 5 = 'To a very high extent'.

H. Socio-biographic data

Table 44 Gender, by country (%)

	Italy	Germany	UK	Japan	Total
Gender					
Male	50	70	43	48	54
Female	50	30	57	52	46
Total	100	100	100	100	100
Count	309	391	316	330	1 346

Question G1: Gender

Table 45 Year of birth, by country (means)

	Italy	Germany	UK	Japan	Total
Year of birth					
Arithmetic mean	67	67	68	72	69
Median	68	68	72	72	70
Standardabw.	3	3	10	1	5
Minimum	47	43	24	54	24
Maximum	72	72	74	73	74
Count	307	390	313	324	1 334

Question G2: Year of birth

Table 46 Kind of residence immediately prior to graduation, by country (%; multiple answers)

	Italy	Germany	UK	Japan	Total
Kind of residence immediately prior to graduation					
With a partner	11	39	22	1	19
With parents	76	28	31	42	43
With other persons	12	12	50	5	19
Alone	5	25	7	52	23
Total	103	104	109	101	104
Count	306	385	305	328	1 324

Question G6A: Where did you live prior to graduation? Multiple answers possible.

Table 47 Kind of current residence, by country (%; multiple answers)

	Italy	Germany	UK	Japan	Total
Kind of current residence					
With a partner	41	60	41	21	41
With parents	47	8	15	46	28
With other persons	4	6	29	8	11
Alone	9	29	19	30	22
Total	101	103	103	105	103
Count	306	382	308	328	1 324

Question G6B: Where do you live currently? Multiple answers possible.

I. Retrospective assessment of study

Table 48 Utility of study viewed retrospectively, by country (arithmetic mean)

	Italy	Germany	UK	Japan	Total
To find a satisfying job after finishing your studies	2.8	3.9	3.3	3.3	3.4
In your long-term career prospects	2.9	3.7	3.8	3.4	3.5
In the development of your personality	3.7	4.0	4.2	3.9	4.0
Count	292	391	309	327	1 319

Question I1: To what extent did your studies help you...? Scale of answers from 1 = 'Not at all' to 5 = 'To a very high extent'.

Table 49 Utility of study viewed retrospectively, by country (%; responses 1 and 2)

	Italy	Germany	UK	Japan	Total
To find a satisfying job after finishing your studies	41	11	31	25	26
In your long-term career prospects	37	14	13	20	21
In the development of your personality	14	5	4	9	8
Count	292	391	309	327	1 319

Question I1: To what extent did your studies help you...? Scale of answers from 1 = 'Not at all' to 5 = 'To a very high extent'.

Table 50 Utility of study viewed retrospectively, by country (%; responses 4 and 5)

	Italy	Germany	UK	Japan	Total
To find a satisfying job after finishing your studies	37	68	51	48	52
In your long-term career prospects	40	61	63	49	54
In the development of your personality	63	79	80	69	73
Count	292	391	309	327	1 319

Question I1: To what extent did your studies help you...? Scale of answers from 1 = 'Not at all' to 5 = 'To a very high extent'.

Table 51 Satisfaction with course of study, by country (arithmetic mean)

	Italy	Germany	UK	Japan	Total
Choose the same course of study	3.6	3.8	3.8	3.4	3.6
Choose the same institution of higher education	3.5	3.8	3.9	3.1	3.6
Choose a higher degree level of higher education	3.1	2.0	3.0	-	2.7
Choose a lower degree level of higher education	1.7	1.4	1.2	2.1	1.6
Decide not to study at all	1.4	1.4	1.2	1.5	1.4
Count	293	390	309	326	1 318

Question I2: Looking back, if you were free to choose again, how likely would you...? Scale of answers from 1 = 'Not likely at all' to 5 = 'Very likely'.

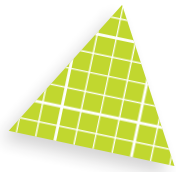


Table 52 Satisfaction with course of study, by country (%; responses 1 and 2)

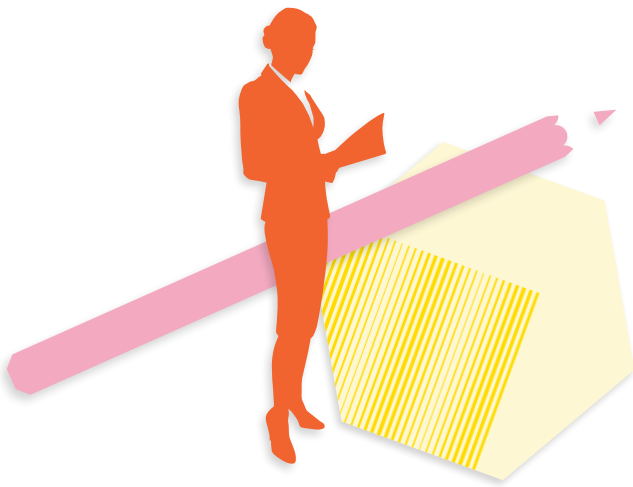
	Italy	Germany	UK	Japan	Total
Choose the same course of study	23	19	22	25	22
Choose the same institution of higher education	25	16	14	29	21
Choose a higher degree level of higher education	34	67	39	0	49
Choose a lower degree level of higher education	82	87	94	67	83
Decide not to study at all	89	87	94	85	89
Count	293	390	309	326	1 318

Question I2: Looking back, if you were free to choose again, how likely would you...? Scale of answers from 1 = 'Not likely at all' to 5 = 'Very likely'.

Table 53 Satisfaction with course of study, by country (%; responses 4 and 5)

	Italy	Germany	UK	Japan	Total
Choose the same course of study	59	67	65	47	60
Choose the same institution of higher education	57	64	70	34	56
Choose a higher degree level of higher education	43	16	44	0	33
Choose a lower degree level of higher education	10	2	3	20	8
Decide not to study at all	6	7	4	4	5
Count	293	390	309	326	1 318

Question I2: Looking back, if you were free to choose again, how likely would you...? Scale of answers from 1 = 'Not likely at all' to 5 = 'Very likely'.



Appendix 1:
The tracer study 2000 questionnaire

Selections from the Cheers questionnaire

Number of questions: 37

Number of variables: 223

Higher education and graduate employment in Europe

Survey of graduates of the year 1995

Extract from the international master questionnaire

Some questions were adapted and for some open questions only the coded answers on a high level of aggregation are included here (like B1, C10D).

	A	Educational background prior to study	S8

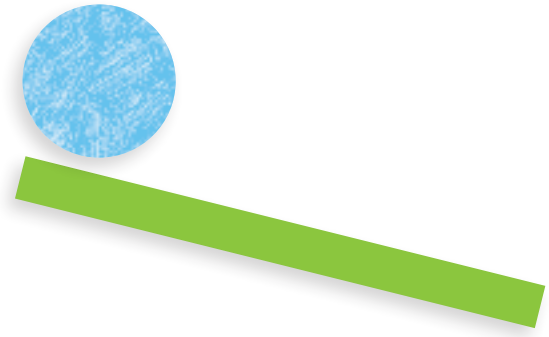
No questions selected from this part of the Cheers questionnaire.

	B	Course of studies	S8

	B1	Please provide information about all higher education courses you have ever taken - major(s) studied.	Q68
1	☐	Humanities	
2	☐	Sciences	
3	☐	Engineering	

	B2	Did you spend time abroad during the time of your study?	Q68
1	☐	No	
2	☐	Yes	

	B8	If you look back to your course of study that you graduated from in 1994 or 1995, to what extent were the following modes of teaching and learning emphasised by your institution of higher education and its teachers?				B8
	Not at all				To a very high extent	
	1	2	3	4	5	
1	☐	☐	☐	☐	☐	Facts and instrumental knowledge
2	☐	☐	☐	☐	☐	Theories, concepts or paradigms
3	☐	☐	☐	☐	☐	Attitudes and socio-communicative skills
4	☐	☐	☐	☐	☐	Independent learning
5	☐	☐	☐	☐	☐	Regular class attendance
6	☐	☐	☐	☐	☐	Teacher as the main source of information and understanding
7	☐	☐	☐	☐	☐	Freedom to choose courses and areas of specialisation
8	☐	☐	☐	☐	☐	Project and problem-based learning
9	☐	☐	☐	☐	☐	Direct acquisition of work experience
10	☐	☐	☐	☐	☐	Out-of-class communication between students and staff
11	☐	☐	☐	☐	☐	Writing a thesis [NatCat; Thesis or other substantial academic assignment]
12	☐	☐	☐	☐	☐	Detailed regular assessment of academic progress

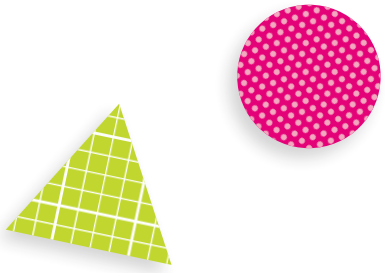


	B9	How do you rate the study provisions and study conditions you experienced in the course of study that you graduated from in 1994 or 1995?				B9
	Very bad				Very good	
	1	2	3	4	5	
1	☐	☐	☐	☐	☐	Academic advice offered in general
2	☐	☐	☐	☐	☐	Assistance/advice for your final examination
3	☐	☐	☐	☐	☐	Course content of major
4	☐	☐	☐	☐	☐	Variety of courses offered
5	☐	☐	☐	☐	☐	Design of degree programme
6	☐	☐	☐	☐	☐	Testing/grading system
7	☐	☐	☐	☐	☐	Opportunity to choose courses and areas of specialisation
8	☐	☐	☐	☐	☐	Practical emphasis of teaching and learning
9	☐	☐	☐	☐	☐	Teaching quality
10	☐	☐	☐	☐	☐	Chances to participate in research projects
11	☐	☐	☐	☐	☐	Research emphasis of teaching and learning
12	☐	☐	☐	☐	☐	Provision of work placements and other work experience
13	☐	☐	☐	☐	☐	Opportunity for out-of-class contacts with teaching staff
14	☐	☐	☐	☐	☐	Contacts with fellow students
15	☐	☐	☐	☐	☐	Chance for students to have an impact on university policies
16	☐	☐	☐	☐	☐	Equipment and stocking of libraries
17	☐	☐	☐	☐	☐	Supply of teaching material
18	☐	☐	☐	☐	☐	Quality of technical equipment (e.g. PC, measuring instruments, etc.)

	C	Job search and sequence of professional activities	S8

	C1	Have you ever sought a job since graduation in 1994 or 1995?	C1
1	☐	Yes → **Please go to question C2**	
2	☐	No, I set up my own business/self-employment	
3	☐	No, I continued the job I had before graduation	
4	☐	No, I continued to study	
5	☐	No, I obtained work without actually searching → **Please go to question C8**	
6	☐	Other (please specify):	

→ If you have not sought a job please go to question C9



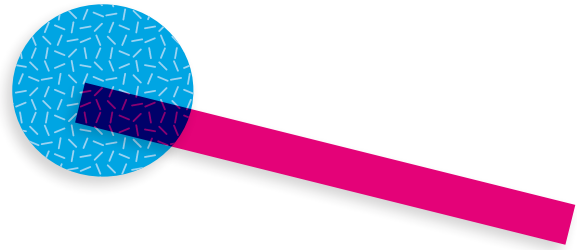
	C2	When did you start looking for a job?	C2
1	☐	Prior to graduation	
2	☐	Around the time of graduation	
3	☐	After graduation	

	C4	How did you try to find your first job after graduation? Multiple answers possible.	C4
1	☐	I applied for an advertised vacancy	
2	☐	I contacted employers without knowing about a vacancy	
3	☐	I launched advertisements by myself	
4	☐	I was approached by an employer	
5	☐	I contacted a public employment agency [NatCat]	
6	☐	I contacted a commercial employment agency	
7	☐	I enlisted the help of the careers/placement office [NatCat] of my institution of higher education	
8	☐	I enlisted the help of teaching staff of the institution of higher education	
9	☐	I established contacts while working during the course of study	
10	☐	I used other personal connections/contacts (e.g. parents, relatives, friends)	
11	☐	I started my own business/self-employment	
12	☐	Other (please specify):	

	C5	Which method was the most important for getting your first job after graduation in 1994 or 1995?	C5
1	☐☐	Most important method	C6

	C6	How many employers did you contact before you took up your first job after graduation in 1994 or 1995?	C6
1	☐☐☐	Number of employers contacted	

	C7	How many months altogether did you search for your first job after graduation in 1994 or 1995, which you consider not to be a casual job?	C7
1	☐☐☐	Number of months of job seeking	

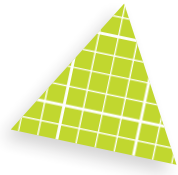


	C10A	Kind of current major activity?	C10A
1	☐	Employed	
2	☐	Self-employed	
3	☐	Not employed, seeking employment	
4	☐	Professional training	
5	☐	Advanced academic study	
6	☐	Child rearing, family care	
7	☐	Other (please specify):	

	C10B	Full-time or part-time?	C10B
1	☐	Full-time	
2	☐	Part-time	

	C10C	Type of contract?	C10C
1	☐	Permanent	
2	☐	Temporary	

	C10D	What is your job title?	C10D
1	☐	Senior manager	
2	☐	Professional	
3	☐	Technician	
4	☐	Clerk	
5	☐	Service worker	
6	☐	Skilled agricultural worker	
7	☐	Craft and related	
8	☐	Plant and machine	
9	☐	Elementary occupation	



	D	Employment and work	S8

	D1	If you are currently employed/self-employed, how would you describe your current professional situation? Multiple answers possible.	D1
1	☐	I have regular employment/I am self-employed	
2	☐	I have casual jobs related to my study	
3	☐	I have casual jobs not related to my study	
4	☐	I have more than one job	
5	☐	I am currently doing military or civilian service	
6	☐	Other (please specify):	

	D4	Please state the kind of your current employer/institution (if several, please refer to main employer).	D4
1	☐	Public employer	
2	☐	Non-profit organisation	
3	☐	Private employer	
4	☐	Self-employed	
5	☐	Other (please specify):	

	D5	In which economic sector are you currently working?	Q71
1		.....	

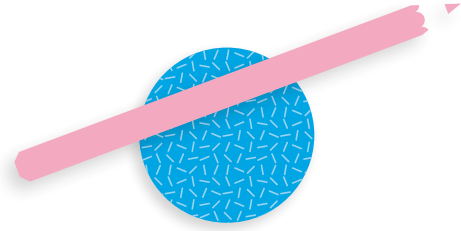
	D9	Please estimate, to the best of your ability, the approximate number of people who are working in...	D9
1	☐☐☐☐☐	The location where you currently work	
2	☐☐☐☐☐	The entire organisation if there is more than one location	

	D11	What is your approximate annual gross income in thousands?	D9
1	☐☐☐☐☐	From your current major job *(excluding overtime and extra payments)*	
2	☐☐☐☐☐	From overtime and extra payments in your main job	
3	☐☐☐☐☐	From other jobs	

	E	Acquired competencies and work requirements					S8

	E1A	Please state the extent to which you had the following competencies at the time of graduation in 1994 or 1995					E1A
	Not at all				To a very high extent		
	1	2	3	4	5		
1	☐	☐	☐	☐	☐	Broad general knowledge	
2	☐	☐	☐	☐	☐	Cross-disciplinary thinking/knowledge	
3	☐	☐	☐	☐	☐	Field-specific theoretical knowledge	
4	☐	☐	☐	☐	☐	Field-specific knowledge of methods	
5	☐	☐	☐	☐	☐	Foreign language proficiency	
6	☐	☐	☐	☐	☐	Computer skills	
7	☐	☐	☐	☐	☐	Understanding complex social, organisational and technical systems	
8	☐	☐	☐	☐	☐	Planning, coordinating and organising	
9	☐	☐	☐	☐	☐	Applying rules and regulations	
10	☐	☐	☐	☐	☐	Economic reasoning	
11	☐	☐	☐	☐	☐	Documenting ideas and information	
12	☐	☐	☐	☐	☐	Problem-solving ability	
13	☐	☐	☐	☐	☐	Analytical competencies	
14	☐	☐	☐	☐	☐	Learning abilities	
15	☐	☐	☐	☐	☐	Reflective thinking, assessing one's own work	
16	☐	☐	☐	☐	☐	Creativity	
17	☐	☐	☐	☐	☐	Working under pressure	
18	☐	☐	☐	☐	☐	Accuracy, attention to detail	
19	☐	☐	☐	☐	☐	Time management	
20	☐	☐	☐	☐	☐	Negotiating	
21	☐	☐	☐	☐	☐	Fitness for work	
22	☐	☐	☐	☐	☐	Manual skills	
23	☐	☐	☐	☐	☐	Working independently	
24	☐	☐	☐	☐	☐	Working in a team	
25	☐	☐	☐	☐	☐	Initiative	
26	☐	☐	☐	☐	☐	Adaptability	
27	☐	☐	☐	☐	☐	Assertiveness, decisiveness, persistence	
28	☐	☐	☐	☐	☐	Power of concentration	
29	☐	☐	☐	☐	☐	Getting personally involved	
30	☐	☐	☐	☐	☐	Loyalty, integrity	
31	☐	☐	☐	☐	☐	Critical thinking	
32	☐	☐	☐	☐	☐	Oral communication skill	
33	☐	☐	☐	☐	☐	Written communication skill	
34	☐	☐	☐	☐	☐	Tolerance, appreciation of different points of view	
35	☐	☐	☐	☐	☐	Leadership	
36	☐	☐	☐	☐	☐	Taking responsibilities, decision-making	

	E1B	Please state the extent to which the following competencies are required in your current work.				E1B
	Not at all				To a very high extent	
	1	2	3	4	5	
1	☐	☐	☐	☐	☐	Broad general knowledge
2	☐	☐	☐	☐	☐	Cross-disciplinary thinking/knowledge
3	☐	☐	☐	☐	☐	Field-specific theoretical knowledge
4	☐	☐	☐	☐	☐	Field-specific knowledge of methods
5	☐	☐	☐	☐	☐	Foreign language proficiency
6	☐	☐	☐	☐	☐	Computer skills
7	☐	☐	☐	☐	☐	Understanding complex social, organisational and technical systems
8	☐	☐	☐	☐	☐	Planning, coordinating and organising
9	☐	☐	☐	☐	☐	Applying rules and regulations
10	☐	☐	☐	☐	☐	Economic reasoning
11	☐	☐	☐	☐	☐	Documenting ideas and information
12	☐	☐	☐	☐	☐	Problem-solving ability
13	☐	☐	☐	☐	☐	Analytical competencies
14	☐	☐	☐	☐	☐	Learning abilities
15	☐	☐	☐	☐	☐	Reflective thinking, assessing one's own work
16	☐	☐	☐	☐	☐	Creativity
17	☐	☐	☐	☐	☐	Working under pressure
18	☐	☐	☐	☐	☐	Accuracy, attention to detail
19	☐	☐	☐	☐	☐	Time management
20	☐	☐	☐	☐	☐	Negotiating
21	☐	☐	☐	☐	☐	Fitness for work
22	☐	☐	☐	☐	☐	Manual skills
23	☐	☐	☐	☐	☐	Working independently
24	☐	☐	☐	☐	☐	Working in a team
25	☐	☐	☐	☐	☐	Initiative
26	☐	☐	☐	☐	☐	Adaptability
27	☐	☐	☐	☐	☐	Assertiveness, decisiveness, persistence
28	☐	☐	☐	☐	☐	Power of concentration
29	☐	☐	☐	☐	☐	Getting personally involved
30	☐	☐	☐	☐	☐	Loyalty, integrity
31	☐	☐	☐	☐	☐	Critical thinking
32	☐	☐	☐	☐	☐	Oral communication skill
33	☐	☐	☐	☐	☐	Written communication skill
34	☐	☐	☐	☐	☐	Tolerance, appreciation of different points of view
35	☐	☐	☐	☐	☐	Leadership
36	☐	☐	☐	☐	☐	Taking responsibilities, decision-making



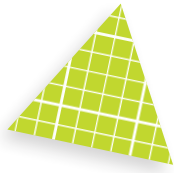
	E2	To what extent has your study been useful for...?				E2
	Not at all				To a very high extent	
	1	2	3	4	5	
1	☐	☐	☐	☐	☐	Preparing you for your present work tasks
2	☐	☐	☐	☐	☐	Preparing you for tasks in other spheres of life

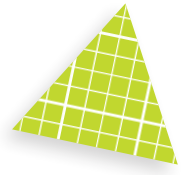
	F	Relationship between higher education and work	S8

	F1	If you take into consideration your current work tasks altogether, to what extent do you use the knowledge and skills acquired in the course of study?	Q56
	Not at all		To a very high extent
	1	2	3	4	5
1	☐	☐	☐	☐	☐

	F2	How would you characterise the relationship between your field of study and your area of work?	Q57
1	☐	My field of study is the only possible/by far the best field	
2	☐	Some other fields could prepare for the area of work as well	
3	☐	Another field would have been more useful	
3	☐	The field of study does not matter very much	
4	☐	Higher education studies are not at all related to my area of work	
5	☐	Other (please specify):	

	F3A	If you consider all dimensions of your employment and work (status, position, income, work tasks, etc.), to what extent is your employment and work appropriate to your level of education?	F3A
	Not at all appropriate		Completely appropriate
	1	2	3	4	5
1	☐	☐	☐	☐	☐





	F3B	What is the most appropriate level of course of study/degree for your employment and work in comparison to that which you graduated from?	F3B
1	☐	A higher level than the one I graduated from	F3B
2	☐	The same level	
3	☐	A lower level of higher/tertiary education	
4	☐	No higher/tertiary education at all	
5	☐	Other (please specify):	

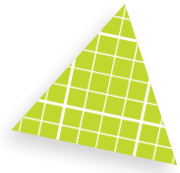
	F4	If you consider your employment and work as not particularly appropriate and not linked to your education, why did you take it up? Multiple answers possible	F4
1	☐	I have not (yet) been able to find a job more appropriate	
2	☐	In doing this job I have better career prospects	
3	☐	I prefer an occupation which is not closely connected to my studies	
4	☐	I was promoted to a position less linked to my studies than my previous position(s)	
5	☐	I can get a higher income in my current job	
6	☐	My current job offers me more security	
7	☐	My current job is more interesting	
8	☐	My current job provides the opportunity for part-time/flexible schedules etc.	
9	☐	My current job enables me to work in a locality which I prefer	
10	☐	My current job allows me to take into account family needs	
11	☐	At the beginning of the career I envisaged I would have to accept work not closely linked to my study	
12	☐	Other (please specify):	
13	☐	Not applicable, I consider my job closely linked to my studies	

	G	Work orientations and job satisfaction	S1

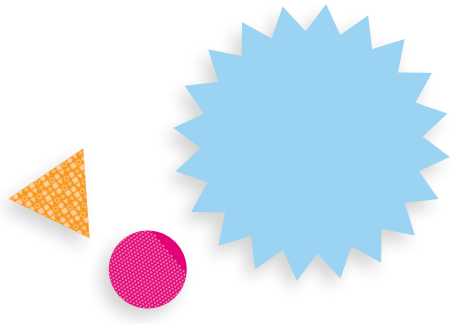
	G1	Overall, to what extent are you satisfied with your current work?	Q65

	Very dissatisfied				Very satisfied
	1	2	3	4	5
1	☐	☐	☐	☐	☐

	G3A	How important are the following characteristics of an occupation for you personally?				G3A
	Not at all important				Very important	
	1	2	3	4	5	
1	☐	☐	☐	☐	☐	Largely independent disposition of work
2	☐	☐	☐	☐	☐	Opportunity to undertake scientific/scholarly work
3	☐	☐	☐	☐	☐	Clear and well-ordered tasks
4	☐	☐	☐	☐	☐	Possibilities for using acquired knowledge and skills
5	☐	☐	☐	☐	☐	Job security
6	☐	☐	☐	☐	☐	Social recognition and status
7	☐	☐	☐	☐	☐	Opportunity to pursue own ideas
8	☐	☐	☐	☐	☐	Good social climate
9	☐	☐	☐	☐	☐	Opportunity to pursue continuous learning
10	☐	☐	☐	☐	☐	High income
11	☐	☐	☐	☐	☐	Chances of (political) influence
12	☐	☐	☐	☐	☐	Challenging tasks
13	☐	☐	☐	☐	☐	Good career prospects
14	☐	☐	☐	☐	☐	Enough time for leisure activities
15	☐	☐	☐	☐	☐	Coordinating and management tasks
16	☐	☐	☐	☐	☐	Possibility of working in a team
17	☐	☐	☐	☐	☐	Chance to do something useful for society
18	☐	☐	☐	☐	☐	Variety
19	☐	☐	☐	☐	☐	Good chances to combine employment with family tasks



	G3B	To what extent do the following aspects apply to your current job situation?				G3B
	Not at all				To a very high extent	
	1	2	3	4	5	
1	☐	☐	☐	☐	☐	Largely independent disposition of work
2	☐	☐	☐	☐	☐	Opportunity to undertake scientific/scholarly work
3	☐	☐	☐	☐	☐	Clear and well-ordered tasks
4	☐	☐	☐	☐	☐	Possibilities for using acquired knowledge and skills
5	☐	☐	☐	☐	☐	Job security
6	☐	☐	☐	☐	☐	Social recognition and status
7	☐	☐	☐	☐	☐	Opportunity to pursue own ideas
8	☐	☐	☐	☐	☐	Good social climate
9	☐	☐	☐	☐	☐	Opportunity to pursue continuous learning
10	☐	☐	☐	☐	☐	High income
11	☐	☐	☐	☐	☐	Chances of (political) influence
12	☐	☐	☐	☐	☐	Challenging tasks
13	☐	☐	☐	☐	☐	Good career prospects
14	☐	☐	☐	☐	☐	Enough time for leisure activities
15	☐	☐	☐	☐	☐	Coordinating and management tasks
16	☐	☐	☐	☐	☐	Possibility of working in a team
17	☐	☐	☐	☐	☐	Chance to do something useful for society
18	☐	☐	☐	☐	☐	Variety
19	☐	☐	☐	☐	☐	Good chances to combine employment with family tasks



	H	Professional training	S1

No questions selected from this part of the Cheers questionnaire.

	I	Socio-biographic data	S1

	I1	What is your gender?	Q81
1	☐	Male	
2	☐	Female	

	I2	In which year were you born?	Q82
1	☐☐☐☐	Year of birth	

	I6A	Where did you live immediately prior to graduation in 1994 or 1995?	Q60
1	☐	With a partner	
2	☐	With parents	
3	☐	With other persons	
4	☐	Alone	

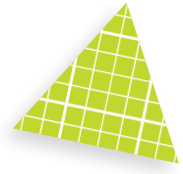
	I6B	Where do you live currently?	Q60
1	☐	With a partner	
2	☐	With parents	
3	☐	With other persons	
4	☐	Alone	

	J	Retrospective assessment of studies					S1

	J1	To what extent did your studies help you?					J1
	Not at all				To a very high extent		
	1	2	3	4	5		
1	☐	☐	☐	☐	☐	To find a satisfying job after finishing your studies	
2	☐	☐	☐	☐	☐	In your long-term career prospects?	
3	☐	☐	☐	☐	☐	In the development of your personality?	

	J2	Looking back, if you were free to choose again, how likely would you...?					J2
	Not likely at all				Very likely		
	1	2	3	4	5		
1	☐	☐	☐	☐	☐	Choose the same course of study	
2	☐	☐	☐	☐	☐	Choose the same institution of higher education	
3	☐	☐	☐	☐	☐	Choose a higher degree level of higher education [NatCat]	
4	☐	☐	☐	☐	☐	Choose a lower degree level of higher education [NatCat]	
5	☐	☐	☐	☐	☐	Decide not to study at all	

Thank you very much for completing the questionnaire.



Appendix 2:
Data documentation (codebook) of the tracer study 2000

Tracer study 2000
Survey of graduates of the year 1995

Sample codebook
Selected variables from the Cheers (Careers after Higher Education a European Research Study) project are used for the sample codebook.

H1	**Z.**	**Key Data**

QU	**Z1**	**Case number**
VN	Variable name	Variable label
CV	**ID**	Case number
VV	Value/codes	Value label
CC	1	Case 1
CC	2	Case 2
CC	3	Case 3
OT	Other information	Text
SU	Subject	Case number
IN	Indications	Very import
CH	Check	Double case numbers?
QF	Questionnaire	
DA	Data analysis	

QU	**Z2**	**Country**
VN	Variable name	Variable label
CV	**COUNTRY**	Country
VV	Value/codes	Value label
CC	1	Italy
CC	2	Germany
CC	3	United Kingdom
CC	4	Japan
CC	-9	No answer
OT	Other information	Text
SU	Subject	Country
IN	Indications	
CH	Check	No missings allowed
MV	Missing value	-9
QF	Questionnaire	
DA	Data analysis	

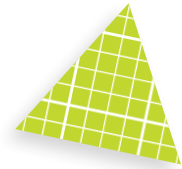
H1	A.	Course of Study

No questions extracted.

H1	B.	Course of Studies

QU	B1	What has been your (major) field of study?
VN	Variable name	Variable label
CV	FIELD	Field of study
VV	Value/codes	Value label
CC	1	Humanities
CC	2	Sciences
CC	3	Engineering
CC	-9	No answer
OT	Other information	Text
SU	Subject	Major Field of Study
IN	Indications	
CH	Check	
MV	Missing value	-9 TO -1
QF	Questionnaire	
DA	Data analysis	

QU	B2	Did you spend any time abroad during the period of your study (in order to work or to study)?
VN	Variable name	Variable label
CV	B2	Time spent abroad during study period
VV	Value/codes	Value label
CC	1	Yes
CC	2	No
CC	-9	No answer
OT	Other information	Text
SU	Subject	Time Spent Abroad During Study Period
IN	Indications	
CH	Check	
MV	Missing value	-9 TO -1
QF	Questionnaire	
DA	Data analysis	

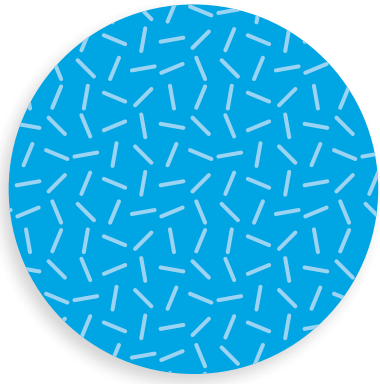


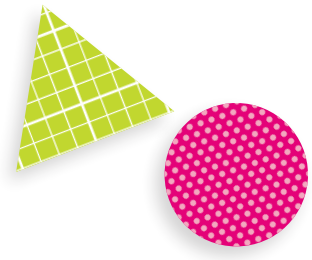
QU	B8	If you look back to your course of study that you graduated from in 1994 or 1995, to what extent were the following modes of teaching and learning emphasised by your institution of higher education and its teachers? Scale of answers from 1 = 'Not at all' to 5 = 'To a very high extent'.
VN	Variable name	Variable label
OR	B8_1	Facts and instrumental knowledge
OR	B8_2	Theories, concepts or paradigms
OR	B8_3	Attitudes and socio-communicative skills
OR	B8_4	Independent learning
OR	B8_5	Regular class attendance
OR	B8_6	Teacher as the main source of information and understanding
OR	B8_7	Freedom to choose courses and areas of specialisation
OR	B8_8	Project and problem-based learning
OR	B8_9	Direct acquisition of work experience
OR	B8_10	Out-of-class communication between students and staff
OR	B8_11	Writing a thesis
OR	B8_12	Detailed regular assessment of academic progress
VV	Value/codes	Value label
CC	1	1 Not at all
CC	2	2
CC	3	3
CC	4	4
CC	5	5 To a very high extent
CC	-9	No answer
OT	Other information	Text
SU	Subject	Emphasis on Modes of Teaching and Learning
IN	Indications	
CH	Check	
MV	Missing value	-9 TO -1
QF	Questionnaire	
DA	Data analysis	

QU	B9	How do you rate the study provisions and study conditions you experienced in the course of study that you graduated from in 1994 or 1995? Scale of answers from 1 = 'Very bad' to 5 = 'Very good'.
VN	Variable name	Variable label
OR	B9_1	Academic advice offered in general
OR	B9_2	Assistance/advice for your final examination
OR	B9_3	Course content of major
OR	B9_4	Variety of courses offered
OR	B9_5	Design of degree programme
OR	B9_6	Testing/grading system
OR	B9_7	Opportunity to choose courses and areas of specialisation
OR	B9_8	Practical emphasis of teaching and learning
OR	B9_9	Teaching quality
OR	B9_10	Chances to participate in research projects
OR	B9_11	Research emphasis of teaching and learning
OR	B9_12	Provision of work placements and other work experience
OR	B9_13	Opportunity for out-of-class contacts with teaching staff
OR	B9_14	Contacts with fellow students
OR	B9_15	Chance for students to have an impact on university policies
OR	B9_16	Equipment and stocking of libraries
OR	B9_17	Supply of teaching material
OR	B9_18	Quality of technical equipment (e.g. PC, measuring instruments, etc.)
VV	Value/codes	Value label
CC	1	1 Very bad
CC	2	2
CC	3	3
CC	4	4
CC	5	5 Very good
CC	-9	No answer
OT	Other information	Text
SU	Subject	Rating of Study Provisions and Conditions
IN	Indications	
CH	Check	
MV	Missing value	-9 TO -1
QF	Questionnaire	
DA	Data analysis	

H1	C.	Job Search After Graduation

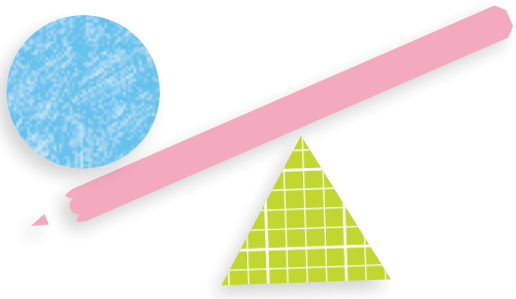
QU	C1	Have you ever sought a job since graduation 1994 or 1995? Exclude applications for casual and vacation jobs.
VN	Variable name	Variable label
MD	C1_1	Yes, I sought a job since graduation
MD	C1_2	No, I set up my own business/self-employment
MD	C1_3	No, I continued the job I had before graduation
MD	C1_4	No, I continued to study
MD	C1_5	No, I obtained work without actually searching
MD	C1_6	Other
VV	Value/codes	Value label
CC	1	Yes
CC	2	No
CC	-9	No answer to C1
OT	Other information	
SU	Subject	Job Search Since Graduation
IN	Indications	
CH	Check	
MV	Missing value	-9 TO -1
QF	Questionnaire	
DA	Data analysis	





QU	C4	How did you try to find your first job after graduation? Multiple answers possible.
VN	Variable name	Variable label
MD	C4_1	I applied for an advertised vacancy
MD	C4_2	I contacted employers without knowing about a vacancy
MD	C4_3	I launched advertisements by myself
MD	C4_4	I was approached by an employer
MD	C4_5	I contacted a public employment agency
MD	C4_6	I contacted a commercial employment agency
MD	C4_7	I enlisted the help of the careers/placement office of my institution of higher education
MD	C4_8	I enlisted the help of teaching staff of the institution of higher education
MD	C4_9	I established contacts while working during the course of study
MD	C4_10	I used other personal connections/contacts (e.g. parents, relatives, friends)
MD	C4_11	I started my own business/self-employment
MD	C4_12	Other
VV	Value/codes	Value label
CC	1	Yes
CC	2	No
CC	-8	Not applicable, no job search
CC	-9	No answer to C4
OT	Other information	Text
SU	Subject	Methods of Job Search
IN	Indications	
CH	Check	
MV	Missing value	-9 TO -1
QF	Questionnaire	
DA	Data analysis	

QU	C5	Which method was the most important for getting your first job after graduation in 1994 or 1995? Please fill in the item number from question C4.
VN	Variable name	Variable label
CV	C5	Most important method for getting your first job after graduation
VV	Value/codes	Value label
CC	1	I applied for an advertised vacancy
CC	2	I contacted employers without knowing about a vacancy
CC	3	I launched advertisements by myself
CC	4	I was approached by an employer
CC	5	I contacted a public employment agency
CC	6	I contacted a commercial employment agency
CC	7	I enlisted the help of the careers/placement office of my institution of higher education
CC	8	I enlisted the help of teaching staff of the institution of higher education
CC	9	I established contacts while working during the course of study
CC	10	I used other personal connections/contacts (e.g. parents, relatives, friends)
CC	11	I started my own business/self-employment
CC	12	Other
CC	-8	Not applicable, I have not found a job after graduation
CC	-9	No answer
OT	Other information	Text
SU	Subject	Most Important Method for Getting First Job After Graduation
IN	Indications	
CH	Check	
MV	Missing value	-9 TO -1
QF	Questionnaire	
DA	Data analysis	

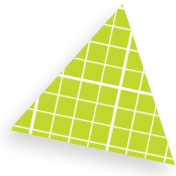


QU	**C6**	**How many employers did you contact (e.g. by letter) before you took up your first job after graduation in 1994 or 1995?**
VN	Variable name	Variable label
ME3	**C6**	Number of employers contacted
VV	Value/codes	Value label
CC	0	Zero employers
CC	1	1 employer
CC	2	2 employers
CC	3	3 employers
CC	-7	Filtered, no job search
CC	-8	Filtered, no job found
CC	-9	No answer
OT	Other information	Text
SU	Subject	Number of Employers Contacted Before First Job After Graduation
IN	Indications	
CH	Check	
MV	Missing value	-9 TO -1
QF	Questionnaire	
DA	Data analysis	

QU	**C7**	**For how many months did you seek altogether (before or after graduation) your first job after graduation in 1994 or 1995, which you consider not to be a casual job?**
VN	Variable name	Variable label
ME	**C7**	Duration of job search
VV	Value/codes	Value label
CC	-8	Not applicable, no job search
CC	-9	No answer
OT	Other information	Text
SU	Subject	Duration of Job Search for First Job After Graduation in 1994/1995
IN	Indications	
CH	Check	
MV	Missing value	-9 TO -1
QF	Questionnaire	
DA	Data analysis	

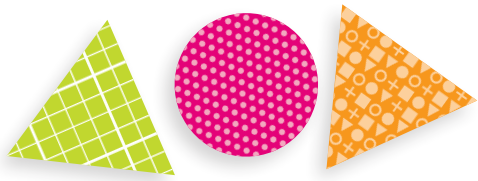
QU	C10A	What is your current major activity?
VN	Variable name	Variable label
CV	C10A	Kind of major activity
VV	Value/codes	Value label
CC	1	Employed
CC	2	Self-employed
CC	3	Not employed, seeking employment
CC	4	Professional training
CC	5	Advanced academic study
CC	6	Child rearing, family care
CC	7	Other
CC	-9	No answer
OT	Other information	Text
SU	Subject	Kind of Major Activity Four Years After Graduation
IN	Indications	
CH	Check	
MV	Missing value	-9 TO -1
QF	Questionnaire	
DA	Data analysis	

QU	C10B	Are you full-time or part-time employed?
VN	Variable name	Variable label
CV	C10B	Full-time or part-time activity
VV	Value/codes	Value label
CC	1	Full-time
CC	2	Part-time
CC	-8	Not employed
CC	-9	No answer
OT	Other information	Text
SU	Subject	Full-time Employment
IN	Indications	
CH	Check	
MV	Missing value	-9 TO -1
QF	Questionnaire	
DA	Data analysis	



QU	C10C	Do you have a permanent or temporary contract?
VN	Variable name	Variable label
CV	C10C	Type of contract
VV	Value/codes	Value label
CC	1	Permanent
CC	2	Temporary
CC	-8	Not employed
CC	-9	No answer
OT	Other information	Text
SU	Subject	Type of Contract
IN	Indications	
CH	Check	
MV	Missing value	-9 TO -1
QF	Questionnaire	
DA	Data analysis	

QU	C10D	What is your job title?
VN	Variable name	Variable label
CV	C10D	Job title
VV	Value/codes	Value label
CC	1	Senior manager
CC	2	Professional
CC	3	Technician
CC	4	Clerk
CC	5	Service worker
CC	6	Skilled agricultural worker
CC	7	Craft and related
CC	8	Plant and machine
CC	9	Elementary occupation
CC	-8	Filtered, not employed
CC	-9	No answer
OT	Other information	Text
SU	Subject	Job Title
IN	Indications	
CH	Check	
MV	Missing value	-9 TO -1
QF	Questionnaire	
DA	Data analysis	



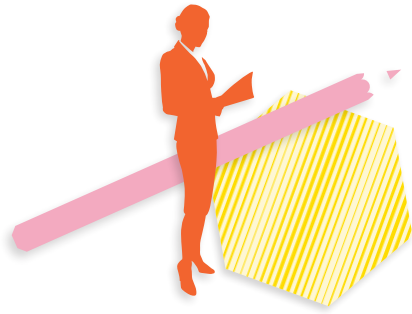
H1	D.	Employment and Work

QU	D1	If you are currently employed/self-employed, how would you describe your current professional situation? Multiple answers possible.
VN	Variable name	Variable label
MD	D1_1	I have regular employment/I am self-employed
MD	D1_2	I have casual jobs related to my study
MD	D1_3	I have casual jobs not related to my study
MD	D1_4	I have more than one job
MD	D1_5	I am currently doing military or civilian service
MD	D1_6	Other
VV	Value/codes	Value label
CC	1	Yes
CC	2	No
CC	-8	Filtered, not employed
CC	-9	-No answer
OT	Other information	Text
SU	Subject	Current Professional Situation
IN	Indications	
CH	Check	
MV	Missing value	-9 TO -1
QF	Questionnaire	
DA	Data analysis	

QU	D4	Please state the kind of your current employer/institution (if several, please refer to main employer). Please mark one single item only.
VN	Variable name	Variable label
CV	D4	Kind of current employer/institution
VV	Value/codes	Value label
CC	1	Public employer
CC	2	Non-profit organisation
CC	3	Private employer
CC	4	Self-employed
CC	5	Other
CC	-8	Filtered, not employed
CC	-9	No answer
OT	Other information	Text
SU	Subject	Kind of Current Employer/Institution
IN	Indications	
CH	Check	
MV	Missing value	-9 TO -1

QU	**D5**	**In which economic sector are you currently working?**
VN	Variable name	Variable label
CV	**D5**	Economic sector
VV	Value/codes	Value label
CC	1	Production
CC	2	Business
CC	3	Public admin.
CC	4	Education
CC	-8	Filtered, not employed
CC	-9	No answer
OT	Other information	Text
SU	Subject	Economic Sector of Current Work
IN	Indications	
CH	Check	
MV	Missing value	-9 TO -1
QF	Questionnaire	
DA	Data analysis	

QU	**D9**	**Please estimate, to the best of your ability, the approximate number of people who are working in...**
VN	Variable name	Variable label
ME	**D9_1**	Number of people in the location where you currently work
ME	**D9_2**	Number of people in the entire organisation if there is more than one location
VV	Value/codes	Value label
CC	-8	Filtered, not employed
CC	-9	No answer
OT	Other information	Text
SU	Subject	Size of Company
IN	Indications	
CH	Check	
MV	Missing value	-9 TO -1
QF	Questionnaire	
DA	Data analysis	



QU	D11	What is your approximate annual gross income (thousands)?
VN	Variable name	Variable label
ME5	D11	Annual gross income
VV	Value/codes	Value label
CC	1	1 000
CC	2	2 000
CC	20	20 000
CC	30	30 000
CC	50	50 000
CC	-8	Filtered, not employed
CC	-9	No answer
OT	Other information	Text
SU	Subject	Annual Gross Income (including extra payments and second jobs)
IN	Indications	
CH	Check	
MV	Missing value	-9 TO -1
QF	Questionnaire	
DA	Data analysis	

H1	E.	Acquired Competencies and Work Requirements

QU	E1A	Please state the extent to which you had the following competencies at the time of graduation in 1994 or 1995? Scale of answers from 1 = 'Not at all' to 5 = 'To a very high extent'.
VN	Variable name	Variable label
OR	E1A_1	Broad general knowledge
OR	E1A_2	Cross-disciplinary thinking/knowledge
OR	E1A_3	Field-specific theoretical knowledge
OR	E1A_4	Field-specific knowledge of methods
OR	E1A_5	Foreign language proficiency
OR	E1A_6	Computer skills
OR	E1A_7	Understanding complex social, organisational and technical systems
OR	E1A_8	Planning, coordinating and organising
OR	E1A_9	Applying rules and regulations
OR	E1A_10	Economic reasoning
OR	E1A_11	Documenting ideas and information
OR	E1A_12	Problem-solving ability
OR	E1A_13	Analytical competencies

OR	**E1A_14**	Learning abilities
OR	**E1A_15**	Reflective thinking, assessing one's own work
OR	**E1A_16**	Creativity
OR	**E1A_17**	Working under pressure
OR	**E1A_18**	Accuracy, attention to detail
OR	**E1A_19**	Time management
OR	**E1A_20**	Negotiating
OR	**E1A_21**	Fitness for work
OR	**E1A_22**	Manual skill
OR	**E1A_23**	Working independently
OR	**E1A_24**	Working in a team
OR	**E1A_25**	Initiative
OR	**E1A_26**	Adaptability
OR	**E1A_27**	Assertiveness, decisiveness, persistence
OR	**E1A_28**	Power of concentration
OR	**E1A_29**	Getting personally involve
OR	**E1A_30**	Loyalty, integrity
OR	**E1A_31**	Critical thinking
OR	**E1A_32**	Oral communication skill
OR	**E1A_33**	Written communication skill
OR	**E1A_34**	Tolerance, appreciation of different points of view
OR	**E1A_35**	Leadership
OR	**E1A_36**	Taking responsibilities, decision-making
VV	Value/codes	Value label
CC	1	1 Not at all
CC	2	2
CC	3	3
CC	4	4
CC	5	5 To a very high extent
CC	-9	No answer
OT	Other information	Text
SU	Subject	Competencies at Time of Graduation
IN	Indications	
CH	Check	
MV	Missing value	-9 TO -1
QF	Questionnaire	
DA	Data analysis	

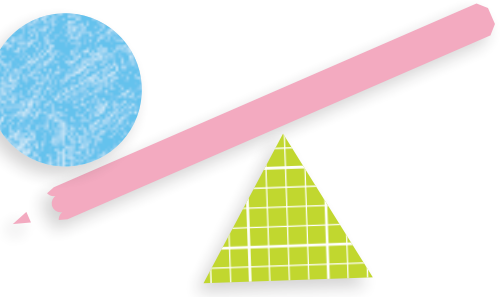
QU	E1B	To what extent are the following competencies required in your current work. Scale of answers from 1 = 'Not at all' to 5 = 'To a very high extent'.
VN	Variable name	Variable label
OR	E1B_1	Broad general knowledge
OR	E1B_2	Cross-disciplinary thinking/knowledge
OR	E1B_3	Field-specific theoretical knowledge
OR	E1B_4	Field-specific knowledge of methods
OR	E1B_5	Foreign language proficiency
OR	E1B_6	Computer skills
OR	E1B_7	Understanding complex social, organisational and technical systems
OR	E1B_8	Planning, coordinating and organising
OR	E1B_9	Applying rules and regulations
OR	E1B_10	Economic reasoning
OR	E1B_11	Documenting ideas and information
OR	E1B_12	Problem-solving ability
OR	E1B_13	Analytical competencies
OR	E1B_14	Learning abilities
OR	E1B_15	Reflective thinking, assessing one's own work
OR	E1B_16	Creativity
OR	E1B_17	Working under pressure
OR	E1B_18	Accuracy, attention to detail
OR	E1B_19	Time management
OR	E1B_20	Negotiating
OR	E1B_21	Fitness for work
OR	E1B_22	Manual skill
OR	E1B_23	Working independently
OR	E1B_24	Working in a team
OR	E1B_25	Initiative
OR	E1B_26	Adaptability
OR	E1B_27	Assertiveness, decisiveness, persistence
OR	E1B_28	Power of concentration
OR	E1B_29	Getting personally involve
OR	E1B_30	Loyalty, integrity
OR	E1B_31	Critical thinking
OR	E1B_32	Oral communication skill
OR	E1B_33	Written communication skill
OR	E1B_34	Tolerance, appreciation of different points of view
OR	E1B_35	Leadership

OR	**E1B_36**	Taking responsibilities, decision-making
VV	Value/codes	Value label
CC	1	1 Not at all
CC	2	2
CC	3	3
CC	4	4
CC	5	5 To a very high extent
CC	-8	Filtered, not employed
CC	-9	No answer
OT	Other information	Text
SU	Subject	Work Requirements
IN	Indications	
CH	Check	
MV	Missing value	-9 TO -1
QF	Questionnaire	
DA	Data analysis	

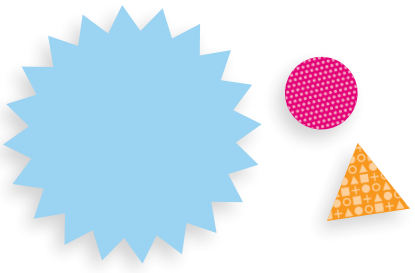
QU	**E2**	**To what extent has your study (from which you graduated in 1994 or 1995) been useful for...? Scale of answers from 1 = 'Not at all' to 5 = 'To a very high extent'.**
VN	Variable name	Variable label
OR	**E2_1**	Preparing for your present work tasks
OR	**E2_2**	Preparing for tasks in other spheres of life
VV	Value/codes	Value label
CC	1	1 Not at all
CC	2	2
CC	3	3
CC	4	4
CC	5	5 To a very high extent
CC	-8	Not applicable, not employed
CC	-9	No answer
OT	Other information	Text
SU	Subject	Utility of Study
IN	Indications	
CH	Check	
MV	Missing value	-9 TO -1
QF	Questionnaire	
DA	Data analysis	

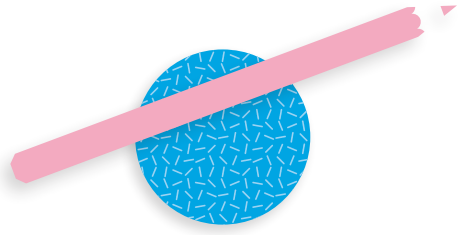
H1	F.	Relationship Between Study and Work

QU	F1	If you take into consideration your current work tasks altogether, to what extent do you use the knowledge and skills acquired in the course of study (from which you graduated in 1994 or 1995)? Scale of answers from 1 = 'Not at all' to 5 = 'To a very high extent'.
VN	Variable name	Variable label
OR	F1	Use of knowledge and skills
VV	Value/codes	Value label
CC	1	1 Not at all
CC	2	2
CC	3	3
CC	4	4
CC	5	5 To a very high extent
CC	-8	Filtered, not employed
CC	-9	No answer
OT	Other information	Text
SU	Subject	Use of Knowledge and Skills Acquired in the Course of Study
IN	Indications	
CH	Check	
MV	Missing value	-9 TO -1
QF	Questionnaire	
DA	Data analysis	



QU	F2	How would you characterise the relationship between your field of study and your area of work?
VN	Variable name	Variable label
MD	F2_1	My field of study is the only possible/by far the best field
MD	F2_2	Some other fields could prepare for the area of work as well
MD	F2_3	Another field would have been more useful
MD	F2_4	The field of study does not matter very much
MD	F2_5	Higher education studies are not at all related to my area of work
MD	F2_6	Other
VV	Value/codes	Value label
CC	1	Yes
CC	2	No
CC	-8	Filtered, not employed
CC	-9	No answer
OT	Other information	Text
SU	Subject	Relationship Between Field of Study and Area of Work
IN	Indications	
CH	Check	
MV	Missing value	-9 TO -1
QF	Questionnaire	
DA	Data analysis	





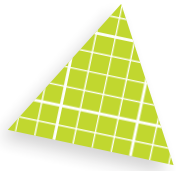
QU	F3A	If you consider all dimensions of your employment and work (status, position, income, work tasks, etc.), to what extent is your employment and work appropriate to your level of education? Scale of answers from 1 = 'Not at all appropriate' to 5 = 'Completely appropriate.'
VN	Variable name	Variable label
OR	F3A	Appropriateness of level of education for employment and work
VV	Value/codes	Value label
CC	1	1 Not at all appropriate
CC	2	2
CC	3	3
CC	4	4
CC	5	5 Completely appropriate
CC	-8	Filtered, not employed
CC	-9	No answer
OT	Other information	Text
SU	Subject	Appropriateness of Level of Education for Employment and Work
IN	Indications	
CH	Check	
MV	Missing value	-9 TO -1
QF	Questionnaire	
DA	Data analysis	

QU	F3B	What is the most appropriate level of course of study/degree for your employment and work in comparison to that which you graduated from in 1994 or 1995?
VN	Variable name	Variable label
CV	F3B	Most appropriate level of course of study/degree
VV	Value/codes	Value label
CC	1	A higher level than the one I graduated from
CC	2	The same level
CC	3	A lower level of higher/tertiary education
CC	4	No higher/tertiary education at all
CC	5	Other
CC	-8	Filtered, not employed
CC	-9	No answer
OT	Other information	Text
SU	Subject	Most Appropriate Level of Course of Study/Degree
IN	Indications	
CH	Check	
MV	Missing value	-9 TO -1
QF	Questionnaire	
DA	Data analysis	

QU	F4	If you consider your employment and work as not particularly appropriate and not linked to your education, why did you take it up? Multiple answers possible.
VN	Variable name	Variable label
MD	F4_1	I have not (yet) been able to find a job more appropriate
MD	F4_2	In doing this job I have better career prospects
MD	F4_3	I prefer an occupation which is not closely connected to my studies
MD	F4_4	I was promoted to a position less linked to my studies than my previous position(s)
MD	F4_5	I can get a higher income in my current job
MD	F4_6	My current job offers me more security
MD	F4_7	My current job is more interesting
MD	F4_8	My current job provides the opportunity for part-time/flexible schedules etc.
MD	F4_9	My current job enables me to work in a locality which I prefer
MD	F4_10	My current job allows me to take into account family needs
MD	F4_11	At the beginning of the career I envisaged I would have to accept work not closely linked to my study
MD	F4_12	Other
MD	F4_13	Not applicable, I consider my job closely linked to my studies
VV	Value/codes	Value label
CC	1	Yes
CC	2	No
CC	-8	Filtered, not employed
CC	-9	No answer
OT	Other information	Text
SU	Subject	Reasons for Taking a Job Not Closely Linked to Study
IN	Indications	
CH	Check	
MV	Missing value	-9 TO -1
QF	Questionnaire	
DA	Data analysis	

H1	G.	Work Orientations and Job Satisfaction

QU	G1	Overall, to what extent are you satisfied with your current work? Scale of answers from 1 = 'Very dissatisfied' to 5 = 'Very satisfied'.
VN	Variable name	Variable label
OR	G1	General satisfaction with current work
VV	Value/codes	Value label
CC	1	1 Very dissatisfied
CC	2	2
CC	3	3
CC	4	4
CC	5	5 Very satisfied
CC	-8	Filtered, not employed
CC	-9	No answer
OT	Other information	Text
SU	Subject	General Satisfaction with Current Work
IN	Indications	
CH	Check	
MV	Missing value	-9 TO -1
QF	Questionnaire	
DA	Data analysis	



QU	G3A	How important are the following characteristics of an occupation for you personally? Scale of answers from 1 = 'Not at all important' to 5 = 'Very important'.
VN	Variable name	Variable label
OR	G3A_1	Largely independent disposition of work
OR	G3A_2	Opportunity to undertake scientific/scholarly work
OR	G3A_3	Clear and well-ordered tasks
OR	G3A_4	Possibilities for using acquired knowledge and skills
OR	G3A_5	Job security
OR	G3A_6	Social recognition and status
OR	G3A_7	Opportunity of pursuing own ideas
OR	G3A_8	Good social climate
OR	G3A_9	Opportunity to pursue continuous learning
OR	G3A_10	High income
OR	G3A_11	Chances of (political) influence
OR	G3A_12	Challenging tasks
OR	G3A_13	Good career prospects
OR	G3A_14	Enough time for leisure activities
OR	G3A_15	Coordinating and management tasks
OR	G3A_16	Possibility of working in a team
OR	G3A_17	Chance to do something useful for society
OR	G3A_18	Variety
OR	G3A_19	Good chances to combine employment with family tasks
VV	Value/codes	Value label
CC	1	1 Not at all important
CC	2	2
CC	3	3
CC	4	4
CC	5	5 Very important
CC	-9	No answer
OT	Other information	Text
SU	Subject	Work Orientations
IN	Indications	
CH	Check	
MV	Missing value	-9 TO -1
QF	Questionnaire	
DA	Data analysis	

QU	G3B	To what extent do the following characteristics of an occupation apply to your current professional situation? Scale of answers from 1 = 'Not at all' to 5 = 'To a very high extent'.
VN	Variable name	Variable label
OR	G3B_1	Largely independent disposition of work
OR	G3B_2	Opportunity to undertake scientific/scholarly work
OR	G3B_3	Clear and well-ordered tasks
OR	G3B_4	Possibilities for using acquired knowledge and skills
OR	G3B_5	Job security
OR	G3B_6	Social recognition and status
OR	G3B_7	Opportunity to pursue own ideas
OR	G3B_8	Good social climate
OR	G3B_9	Opportunity of pursuing continuous learning
OR	G3B_10	High income
OR	G3B_11	Chances of (political) influence
OR	G3B_12	Challenging tasks
OR	G3B_13	Good career prospects
OR	G3B_14	Enough time for leisure activities
OR	G3B_15	Coordinating and management tasks
OR	G3B_16	Possibility of working in a team
OR	G3B_17	Chance to do something useful for society
OR	G3B_18	Variety
OR	G3B_19	Good chances to combine employment with family tasks
VV	Value/codes	Value label
CC	1	1 Not at all
CC	2	2
CC	3	3
CC	4	4
CC	5	5 To a very high extent
CC	-8	Filtered, not employed
CC	-9	No answer
OT	Other information	Text
SU	Subject	Professional Situation
IN	Indications	
CH	Check	
MV	Missing value	-9 TO -1
QF	Questionnaire	
DA	Data analysis	

H1	I.	Socio-Biographic Data

QU	I1	Gender
VN	Variable name	Variable label
CV	I1	Gender
VV	Value/codes	Value label
CC	1	Male
CC	2	Female
CC	-9	No answer
OT	Other information	Text
SU	Subject	Gender
IN	Indications	
CH	Check	
MV	Missing value	-9 TO -1
QF	Questionnaire	
DA	Data analysis	

QU	I2	Year of birth
VN	Variable name	Variable label
ME2	I2	Year of birth
VV	Value/codes	Value label
CC	-9	No answer
OT	Other information	Text
SU	Subject	Year of Birth
IN	Indications	
CH	Check	
MV	Missing value	-9 TO -1
QF	Questionnaire	
DA	Data analysis	

QU	**I6A**	**Where did you live prior to graduation? Multiple answers possible.**
VN	Variable name	Variable label
MD	**I6A_1**	With a partner
MD	**I6A_2**	With parents
MD	**I6A_3**	With other persons
MD	**I6A_4**	Alone
VV	Value/codes	Value label
CC	1	Yes
CC	2	No
CC	-9	No answer
OT	Other information	Text
SU	Subject	Kind of Residence Immediately Prior to Graduation
IN	Indications	
CH	Check	
MV	Missing value	-9 THRU -1
QF	Questionnaire	
DA	Data analysis	

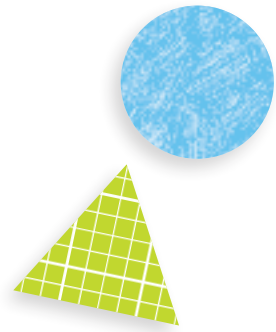
QU	**I6B**	**Where do you live currently? Multiple answers possible.**
VN	Variable name	Variable label
MD	**I6B_1**	With a partner
MD	**I6B_2**	With parents
MD	**I6B_3**	With other persons
MD	**I6B_4**	Alone
VV	Value/codes	Value label
CC	1	Yes
CC	2	No
CC	-9	No answer
OT	Other information	Text
SU	Subject	Kind of Current Residence
IN	Indications	
CH	Check	
MV	Missing value	-9 TO -1
QF	Questionnaire	
DA	Data analysis	

H1	J	Retrospective Assessment of Studies

QU	J1	To what extent did your studies help you...? Scale of answers from 1 = 'Not at all' to 5 = 'To a very high extent'.
VN	Variable name	Variable label
OR	J1_1	To find a satisfying job after finishing your studies
OR	J1_2	In your long-term career prospects
OR	J1_3	In the development of your personality
VV	Value/codes	Value label
CC	1	1 Not at all
CC	2	2
CC	3	3
CC	4	4
CC	5	5 To a very high extent
CC	-9	No answer
OT	Other information	Text
SU	Subject	Utility of Study Viewed Retrospectively
IN	Indications	
CH	Check	
MV	Missing value	-9 TO -1
QF	Questionnaire	
DA	Data analysis	

QU	J2	Looking back, if you were free to choose again, how likely would you...? Scale of answers from 1 = 'Not likely at all' to 5 = 'Very likely'.
VN	Variable name	Variable label
OR	J2_1	Choose the same course of study
OR	J2_2	Choose the same institution of higher education
OR	J2_3	Choose a higher degree level of higher education
OR	J2_4	Choose a lower degree level of higher education
OR	J2_5	Decide not to study at all
VV	Value/codes	Value label
CC	1	1 Not likely at all
CC	2	2
CC	3	3
CC	4	4
CC	5	5 Very likely
CC	-9	No answer
OT	Other information	Text
SU	Subject	Satisfaction with Course of Study
IN	Indications	
CH	Check	
MV	Missing value	-9 TO -1
QF	Questionnaire	
DA	Data analysis	

ANNEX 4.
Data definition (SPSS syntax)



```
* ----------------------------------.
* Data_TSVET_2014_data_definition.sps .
* ----------------------------------.
* Example: a data file (e.g. from an online survey)
* has been already created
* in this step the data will be checked and cleaned
* variable lables and value labels are added
* missing values are set

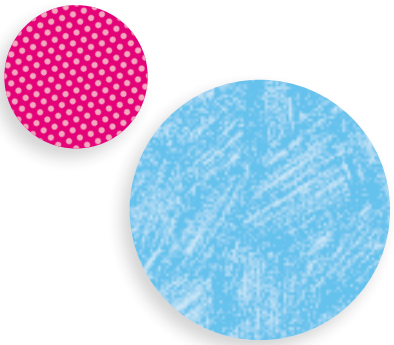
*  1. Get the (uncleaned) raw data
*  2. Definition of the level of measurement
*  3. Definition of labels for variables and values
*  4. FREQUENCIES, to document and check the uncleaned data
*  5. DESCRIPTIVES, to document and check the uncleaned data
*  6. RECODE OF MULTIPLE REPLY ITEMS
*  7. Detection and deletion of LURKERs
*  8. Detection and correction of double IDs
*  9. Handling of filters
* 10. Definition of 'Question not asked'
* 11. DROP-OUT
* 12. FREQUENCIES
* 13. DESCRIPTIVES
* 14. New variables
* 15. SAVE the cleaned data

* ------------------------------------------------------------------------.
 OUTPUT SAVE OUTFILE = 'D:\TSVET_2014\DATA\TSVET_2014_data_definition.spv'.
* ------------------------------------------------------------------------.
* 1. Get the raw data.
* ------------------------------------------------------.
GET
  FILE='D:\TSVET_2014\DATA\TSVET_2014_raw_data.sav'.
DATASET NAME raw_data WINDOW=FRONT.

* ------------------------------------------------------.
* 2. Definition of the level of measurement.
* ------------------------------------------------------.
INCLUDE FILE = "Data_TSVET_2014_measurement_level.sps".
* ------------------------------------------------------.
* 3. Definition of labels for variables and values.
*    Also the missing values are defined.
* ------------------------------------------------------.
INCLUDE FILE = "Data_TSVET_2014_labels.sps".
```

```
* ----------------------------------------------------------.
* 4. FREQUENCIES, to document and check the uncleaned data
* ----------------------------------------------------------.
FREQUENCIES    COUNTRY FIELD
  B2
  B8_1 B8_2 B8_3 B8_4 B8_5 B8_6 B8_7 B8_8 B8_9 B8_10 B8_11 B8_12
  B9_1 B9_2 B9_3 B9_4 B9_5 B9_6 B9_7 B9_8 B9_9 B9_10 B9_11 B9_12
   B9_13 B9_14 B9_15 B9_16  B9_17 B9_18
  C1_1 C1_2 C1_3 C1_4 C1_5 C1_6
  C4_1 C4_2 C4_3 C4_4 C4_5 C4_6 C4_7 C4_8 C4_9 C4_10 C4_11 C4_12
  C5 C6 C7 C10A C10B C10C C10D
  D1_1 D1_2 D1_3 D1_4 D1_5 D1_6
  D4 D5 D9_1 D9_2 D11
  E1A_1 E1A_2 E1A_3 E1A_4 E1A_5 E1A_6 E1A_7 E1A_8 E1A_9 E1A_10 E1A_11 E1A_12
    E1A_13 E1A_14 E1A_15 E1A_16 E1A_17 E1A_18 E1A_19 E1A_20 E1A_21 E1A_22 E1A_23
E1A_24
    E1A_25 E1A_26 E1A_27 E1A_28 E1A_29 E1A_30 E1A_31 E1A_32 E1A_33 E1A_34 E1A_35
E1A_36
  E1B_1 E1B_2 E1B_3 E1B_4 E1B_5 E1B_6 E1B_7 E1B_8 E1B_9 E1B_10 E1B_11 E1B_12
    E1B_13 E1B_14 E1B_15 E1B_16 E1B_17 E1B_18 E1B_19 E1B_20 E1B_21 E1B_22 E1B_23
E1B_24
    E1B_25 E1B_26 E1B_27 E1B_28 E1B_29 E1B_30 E1B_31 E1B_32 E1B_33 E1B_34 E1B_35
E1B_36
  E2_1 E2_2
   F1    F2_1 F2_2 F2_3 F2_4   F2_5 F2_6    F3A F3B
  F4_1 F4_2 F4_3 F4_4 F4_5 F4_6 F4_7 F4_8 F4_9 F4_10 F4_11 F4_12 F4_13
  G1
  G3A_1 G3A_2 G3A_3 G3A_4 G3A_5 G3A_6 G3A_7 G3A_8 G3A_9 G3A_10 G3A_11 G3A_12
    G3A_13 G3A_14 G3A_15 G3A_16 G3A_17 G3A_18 G3A_19
  G3B_1 G3B_2 G3B_3 G3B_4 G3B_5 G3B_6 G3B_7 G3B_8 G3B_9 G3B_10 G3B_11 G3B_12
    G3B_13 G3B_14 G3B_15 G3B_16 G3B_17 G3B_18 G3B_19
  I1 I2     I6A_1 I6A_2 I6A_3 I6A_4     I6B_1 I6B_2 I6B_3 I6B_4
  J1_1 J1_2 J1_3 J2_1    J2_2 J2_3 J2_4 J2_5.
```

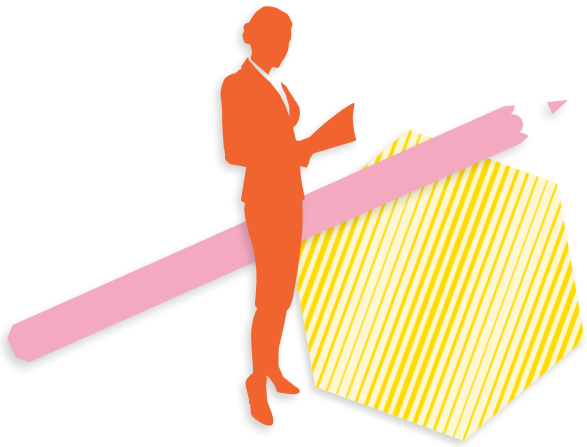
```
* ------------------------------------------------------------.
* 5. DESCRIPTIVES, to document and check the uncleaned data
*    - a very condensed output
* ------------------------------------------------------------.
DESCRIPTIVES
  COUNTRY FIELD
  B2
  B8_1 B8_2 B8_3 B8_4 B8_5 B8_6 B8_7 B8_8 B8_9 B8_10 B8_11 B8_12
  B9_1 B9_2 B9_3 B9_4 B9_5 B9_6 B9_7 B9_8 B9_9 B9_10 B9_11 B9_12
   B9_13 B9_14 B9_15 B9_16  B9_17 B9_18
  C1_1 C1_2 C1_3 C1_4 C1_5 C1_6
  C4_1 C4_2 C4_3 C4_4 C4_5 C4_6 C4_7 C4_8 C4_9 C4_10 C4_11 C4_12
  C5 C6 C7 C10A C10B C10C C10D
  D1_1 D1_2 D1_3 D1_4 D1_5 D1_6
  D4 D5 D9_1 D9_2 D11
  E1A_1 E1A_2 E1A_3 E1A_4 E1A_5 E1A_6 E1A_7 E1A_8 E1A_9 E1A_10 E1A_11 E1A_12
    E1A_13 E1A_14 E1A_15 E1A_16 E1A_17 E1A_18 E1A_19 E1A_20 E1A_21 E1A_22 E1A_23
E1A_24
    E1A_25 E1A_26 E1A_27 E1A_28 E1A_29 E1A_30 E1A_31 E1A_32 E1A_33 E1A_34 E1A_35
E1A_36
  E1B_1 E1B_2 E1B_3 E1B_4 E1B_5 E1B_6 E1B_7 E1B_8 E1B_9 E1B_10 E1B_11 E1B_12
    E1B_13 E1B_14 E1B_15 E1B_16 E1B_17 E1B_18 E1B_19 E1B_20 E1B_21 E1B_22 E1B_23
E1B_24
    E1B_25 E1B_26 E1B_27 E1B_28 E1B_29 E1B_30 E1B_31 E1B_32 E1B_33 E1B_34 E1B_35
E1B_36
  E2_1 E2_2
   F1    F2_1 F2_2 F2_3 F2_4   F2_5 F2_6    F3A F3B
  F4_1 F4_2 F4_3 F4_4 F4_5 F4_6 F4_7 F4_8 F4_9 F4_10 F4_11 F4_12 F4_13
  G1
  G3A_1 G3A_2 G3A_3 G3A_4 G3A_5 G3A_6 G3A_7 G3A_8 G3A_9 G3A_10 G3A_11 G3A_12
    G3A_13 G3A_14 G3A_15 G3A_16 G3A_17 G3A_18 G3A_19
  G3B_1 G3B_2 G3B_3 G3B_4 G3B_5 G3B_6 G3B_7 G3B_8 G3B_9 G3B_10 G3B_11 G3B_12
    G3B_13 G3B_14 G3B_15 G3B_16 G3B_17 G3B_18 G3B_19
  I1 I2     I6A_1 I6A_2 I6A_3 I6A_4     I6B_1 I6B_2 I6B_3 I6B_4
  J1_1 J1_2 J1_3 J2_1    J2_2 J2_3 J2_4 J2_5.
```

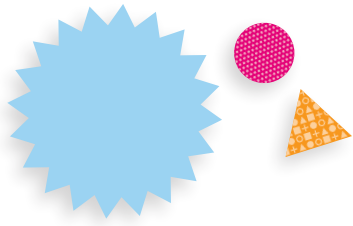


```
* ------------------------------------------------.
* 6.  RECODE OF MULTIPLE REPLY ITEMS     .
* ------------------------------------------------.
* In the raw data there are only two values for
* multiple reply items: 1 = ticked/yes and -9 = no answer.
* It is necessary to recode the 'no answers':
*    if at least one item is ticked/answered then the other
*    items should be recoded to 2 = No.
*    -9 has then the meaning: the whole question is not answered
* ------------------------------------------------------------.
* MD Multiple reply variables
    C1_1 C1_2 C1_3 C1_4 C1_5 C1_6
    C4_1 C4_2 C4_3 C4_4 C4_5 C4_6 C4_7 C4_8 C4_9 C4_10 C4_11 C4_12
    D1_1 D1_2 D1_3 D1_4 D1_5 D1_6
    F2_1 F2_2 F2_3 F2_4 F2_5 F2_6
    F4_1 F4_2 F4_3 F4_4 F4_5 F4_6 F4_7 F4_8 F4_9 F4_10 F4_11 F4_12 F4_13
    I6A_1 I6A_2 I6A_3 I6A_4
    I6B_1 I6B_2 I6B_3 I6B_4
* ------------------------------------------------------------------.
SET TVars=Both ODISPLAY=tables TNumbers=Both ONumbers=Both OVars=Both.
* ------------------------------------------------------------------.

* ------------------------------------------------------------------.
* Question C1.
* ------------------------------------------------------------------.
FREQUENCIES     C1_1 C1_2 C1_3 C1_4 C1_5 C1_6 .
MISSING VALUES  C1_1 C1_2 C1_3 C1_4 C1_5 C1_6 ().
RECODE          C1_1 C1_2 C1_3 C1_4 C1_5 C1_6
                   (1 = 1) (ELSE =2).
COUNT              C1ANSWERS = C1_1 C1_2 C1_3 C1_4 C1_5 C1_6  (1).
RECODE             C1ANSWERS (1 to hi = 0) (0=1).
VARIABLE LABELS    C1ANSWERS 'No answers question C1'.
VALUE LABELS       C1ANSWERS 1 'No answers MD question' 0 'Answers' .
DO REPEAT  V = C1_1 C1_2 C1_3 C1_4 C1_5 C1_6 .
+ IF    (V EQ 2  AND VALUE(C1ANSWERS) = 1 ) V = -9.
+ MISSING VALUES V(-9 to -1).
END REPEAT.
* ------------------------------------------------------------------.
ADD VALUE LABELS   C1_1 C1_2 C1_3 C1_4 C1_5 C1_6
   1 'Yes'
   2 'No'
  -9 'No answer'.
FORMAT             C1_1 C1_2 C1_3 C1_4 C1_5 C1_6 (F2.0)
                 / C1ANSWERS (F2.0).
FREQUENCIES        C1ANSWERS C1_1 C1_2 C1_3 C1_4 C1_5 C1_6 .
* ------------------------------------------------------------------.
```

```
* ------------------------------------------------------------------.
* Question C4.
* ------------------------------------------------------------------.
FREQUENCIES     C4_1 C4_2 C4_3 C4_4 C4_5 C4_6 C4_7 C4_8 C4_9 C4_10 C4_11 C4_12 .
MISSING VALUES  C4_1 C4_2 C4_3 C4_4 C4_5 C4_6 C4_7 C4_8 C4_9 C4_10 C4_11 C4_12 ().
RECODE          C4_1 C4_2 C4_3 C4_4 C4_5 C4_6 C4_7 C4_8 C4_9 C4_10 C4_11 C4_12
                   (1 = 1) (ELSE =2).
COUNT              C4ANSWERS = C4_1 C4_2 C4_3 C4_4 C4_5 C4_6 C4_7 C4_8 C4_9 C4_10
C4_11 C4_12  (1).
RECODE             C4ANSWERS (1 thru hi = 0) (0=1).
VARIABLE LABELS    C4ANSWERS 'No answers question C4'.
VALUE LABELS       C4ANSWERS 1 'No answers MD question' 0 'Answers' .
DO REPEAT  V = C4_1 C4_2 C4_3 C4_4 C4_5 C4_6 C4_7 C4_8 C4_9 C4_10 C4_11 C4_12 .
+ IF    (V EQ 2  AND VALUE(C4ANSWERS) = 1 ) V = -9.
+ MISSING VALUES V(-9 to -1).
END REPEAT.
* ------------------------------------------------------------------.
ADD VALUE LABELS   C4_1 C4_2 C4_3 C4_4 C4_5 C4_6 C4_7 C4_8 C4_9 C4_10 C4_11 C4_12
   1 'Yes'
   2 'No'
  -9 'No answer'.
FORMAT             C4_1 C4_2 C4_3 C4_4 C4_5 C4_6 C4_7 C4_8 C4_9 C4_10 C4_11 C4_12
(F2.0)
                / C4ANSWERS (F2.0).
FREQUENCIES    C4ANSWERS   C4_1 C4_2 C4_3 C4_4 C4_5 C4_6 C4_7 C4_8 C4_9 C4_10 C4_11
C4_12 .
* ------------------------------------------------------------------.
```





```
-----------------------------------------------------------.
* The following MACRO does the above-mentioned handling
* of multiple reply questions in an efficient way.
*-----------------------------------------------------------.
* RECODE-MACRO for  mult responses          .
*-------------------------------------------------.
DEFINE MRRECODE (!POSITIONAL !CHAREND('/')
                /!POSITIONAL !TOKENS(1)  ).
FREQUENCIES       !1 .
MISSING VALUES    !1 ().
RECODE            !1 (1=1) (ELSE=2).
COUNT             !2 = !1 (1).
RECODE            !2 (1 thru hi = 0) (0=1).
VARIABLE LABELS   !2 'No answers MD question'.
VALUE LABELS      !2 1 'No answers MD question' 0 'Answers' .
DO REPEAT V =     !1 .
+ IF    (V EQ 2  AND VALUE(!2) = 1 ) V = -9.
+ MISSING VALUES V(-9 thru -1).
END REPEAT.
* --------.
ADD VALUE LABELS !1
   1 'Yes'
   2 'No'
  -9 'No answer'.
FORMAT            !1 (F2.0) / !2 (F2.0).
MISSING VALUES    !2 (-9).
FREQUENCIES       !2 !1 .
!ENDDEFINE.

*    D1_1 D1_2 D1_3 D1_4 D1_5 D1_6
    F2_1 F2_2 F2_3 F2_4 F2_5 F2_6
    F4_1 F4_2 F4_3 F4_4 F4_5 F4_6 F4_7 F4_8 F4_9 F4_10 F4_11 F4_12 F4_13
    I6A_1 I6A_2 I6A_3 I6A_4
    I6B_1 I6B_2 I6B_3 I6B_4
.
```

```
* Question D1 - application of the MACRO MRRECODE.
FREQUENCIES D1_1 D1_2 D1_3 D1_4 D1_5 D1_6 .
MRRECODE  D1_1 D1_2 D1_3 D1_4 D1_5 D1_6 /D1ANSWERS .

* Question F2 - application of the MACRO MRRECODE.
MRRECODE  F2_1 F2_2 F2_3 F2_4 F2_5 F2_6 /F2ANSWERS .


* Question F4.
MRRECODE  F4_1 F4_2 F4_3 F4_4 F4_5 F4_6 F4_7 F4_8 F4_9 F4_10 F4_11 F4_12 F4_13 /
F4ANSWERS .

* Question I6A.
MRRECODE  I6A_1 I6A_2 I6A_3 I6A_4  /I6AANSWERS .

* Question I6B.
MRRECODE  I6B_1 I6B_2 I6B_3 I6B_4 /I6BANSWERS .
```

```
* ------------------------------------------------------------.
* 7. Detection and deletion of LURKERs .
* A LURKER is somebody who entered the online questionnaire
*   but did not answer a single question.
* ------------------------------------------------------------.

COMPUTE LURKER=0.
VAR LAB LURKER "Questionnaire empty".
COUNT   LURKER =
 FIELD B2 B8_1 B8_2 B8_3 B8_4 B8_5 B8_6 B8_7 B8_8 B8_9 B8_10 B8_11 B8_12 B9_1 B9_2
B9_3 B9_4 B9_5
    B9_6 B9_7 B9_8 B9_9 B9_10 B9_11 B9_12 B9_13 B9_14 B9_15 B9_16 B9_17 B9_18 C1_1
C1_2 C1_3 C1_4 C1_5
    C1_6 C4_1 C4_2 C4_3 C4_4 C4_5 C4_6 C4_7 C4_8 C4_9 C4_10 C4_11 C4_12 C5 C6 C7
C10A C10B C10C C10D
    D1_1 D1_2 D1_3 D1_4 D1_5 D1_6 D4 D5 D9_1 D9_2 D11 E1A_1 E1A_2 E1A_3 E1A_4 E1A_5
E1A_6 E1A_7 E1A_8
    E1A_9 E1A_10 E1A_11 E1A_12 E1A_13 E1A_14 E1A_15 E1A_16 E1A_17 E1A_18 E1A_19
E1A_20 E1A_21 E1A_22
    E1A_23 E1A_24 E1A_25 E1A_26 E1A_27 E1A_28 E1A_29 E1A_30 E1A_31 E1A_32 E1A_33
E1A_34 E1A_35 E1A_36
    E1B_1 E1B_2 E1B_3 E1B_4 E1B_5 E1B_6 E1B_7 E1B_8 E1B_9 E1B_10 E1B_11 E1B_12
E1B_13 E1B_14 E1B_15
    E1B_16 E1B_17 E1B_18 E1B_19 E1B_20 E1B_21 E1B_22 E1B_23 E1B_24 E1B_25 E1B_26
E1B_27 E1B_28 E1B_29
    E1B_30 E1B_31 E1B_32 E1B_33 E1B_34 E1B_35 E1B_36 E2_1 E2_2 F1 F2_1 F2_2 F2_3
F2_4 F2_5 F2_6 F3A F3B
    F4_1 F4_2 F4_3 F4_4 F4_5 F4_6 F4_7 F4_8 F4_9 F4_10 F4_11 F4_12 F4_13 G1 G3A_1
G3A_2 G3A_3 G3A_4
    G3A_5 G3A_6 G3A_7 G3A_8 G3A_9 G3A_10 G3A_11 G3A_12 G3A_13 G3A_14 G3A_15 G3A_16
G3A_17 G3A_18 G3A_19
    G3B_1 G3B_2 G3B_3 G3B_4 G3B_5 G3B_6 G3B_7 G3B_8 G3B_9 G3B_10 G3B_11 G3B_12
G3B_13 G3B_14 G3B_15
    G3B_16 G3B_17 G3B_18 G3B_19 I1 I2 I6A_1 I6A_2 I6A_3 I6A_4 I6B_1 I6B_2 I6B_3
I6B_4 J1_1 J1_2 J1_3
    J2_1 J2_2 J2_3 J2_4 J2_5
   ( 1 thru hi).
RECODE       LURKER (0=1) (1 THRU HI = 2).
VALUE LABELS LURKER
 1 "Yes"
 2 "No".
FREQUENCIES  LURKER.
* LURKERS are no longer in the data.
SELECT IF (LURKER = 2).
```

```
*------------------------------------------------------.
* 8. Detection and correction of double ID  .
*------------------------------------------------------.
* To test the procedure to identify double IDs
* A double ID is created in the test data.
* ID 4 is from country 2
* ID 5 is from country 1 .
IF (ID = 5 ) ID = 4.
* ---------------------.
sort cases by    ID (A).
execute.
* ----------------------------------.
COMPUTE             DOUBLE = 0.
VARIABLE LABELS     DOUBLE "Double ID number".
VALUE LABELS        DOUBLE 1 "Yes" 0 "No" .
if ( lag(ID) = ID) DOUBLE = 1.
FREQUENCIES         DOUBLE.
* --- reverse sorting .
sort cases by  ID (D) DOUBLE (D).
execute.

* ----------------------------------.
COMPUTE              DOUBLE_FIRST  = 0.
VARIABLE LABELS      DOUBLE_FIRST "The first double ID number".
if ( lag(ID) = ID)   DOUBLE_FIRST  = 1.
FREQUENCIES          DOUBLE DOUBLE_FIRST.
* ----------------------------------.
sort cases by    ID (A) DOUBLE.
execute.

* Correction of double ID number.
IF (ID = 4 AND DOUBLE = 1)  ID = 5.
execute.
```

```
*------------------------------------------------------.
* 9. Handling of filters  .
*------------------------------------------------------.

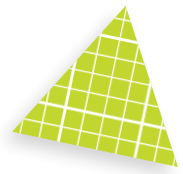
*-----------------------------------------------.
* 1. Job search            .
* C1_1 C1_2 C1_3 C1_4 C1_5 C1_6
 C4_1 C4_2 C4_3 C4_4 C4_5 C4_6 C4_7 C4_8 C4_9 C4_10 C4_11 C4_12
 C5 C6 C7
*-----------------------------------------------.
FREQUENCIES C1_1 C1_2 C1_3 C1_4 C1_5 C1_6
 C4_1 C4_2 C4_3 C4_4 C4_5 C4_6 C4_7 C4_8 C4_9 C4_10 C4_11 C4_12
 C5 C6 C7 C10A C10B C10D D1_1.

COMPUTE                  JOBSEARCH = VALUE( C1_1).
APPLY DICTIONARY FROM *
 /SOURCE VARIABLES =  C1_1
 /TARGET VARIABLES =   JOBSEARCH
 /VARINFO LEVEL MISSING FORMAT VARLABEL VALLABELS = REPLACE.
RECODE                   JOBSEARCH
 (1=1) (2=0).
ADD VALUE LABELS         JOBSEARCH
  0 "No"
  1 "Yes"
.
FREQUENCIES              JOBSEARCH .
*-----------------------------------------------.
DO REPEAT V=C4_1 C4_2 C4_3 C4_4 C4_5 C4_6 C4_7 C4_8 C4_9 C4_10 C4_11 C4_12
 C5 C6 C7.
IF ( JOBSEARCH = 0 AND MISSING(V) ) V = -8.
END REPEAT.
ADD VALUE LABELS
 C4_1 C4_2 C4_3 C4_4 C4_5 C4_6 C4_7 C4_8 C4_9 C4_10 C4_11 C4_12
 C5 C6 C7
 -8 "Filtered; no job search".
* test.
FREQUENCIES C1_1 C1_2 C1_3 C1_4 C1_5 C1_6
 C4_1 C4_2 C4_3 C4_4 C4_5 C4_6 C4_7 C4_8 C4_9 C4_10 C4_11 C4_12
 C5 C6 C7 .
* test.
CROSSTABS
 C5 C6 C7 by C10A C1_1 C1_2 C1_3 C1_4 C1_5 /MISS=INCL.
```

```
*-----------------------------------------------.
* 2. Employment
*-----------------------------------------------.          .
*  D1_1 D1_2 D1_3 D1_4 D1_5 D1_6
  D4 D5
  D9_1 D9_2
  D11
  E1B_1 E1B_2 E1B_3 E1B_4 E1B_5 E1B_6 E1B_7 E1B_8
    E1B_9 E1B_10 E1B_11 E1B_12 E1B_13 E1B_14 E1B_15
    E1B_16 E1B_17 E1B_18 E1B_19 E1B_20 E1B_21 E1B_22 E1B_23 E1B_24 E1B_25 E1B_26
E1B_27 E1B_28 E1B_29
    E1B_30 E1B_31 E1B_32 E1B_33 E1B_34 E1B_35 E1B_36
  E2_1 E2_2
  F1 F2_1 F2_2 F2_3 F2_4 F2_5 F2_6 F3A F3B
  F4_1 F4_2 F4_3 F4_4 F4_5 F4_6 F4_7 F4_8 F4_9 F4_10 F4_11 F4_12 F4_13
 G3B_1 G3B_2 G3B_3 G3B_4 G3B_5 G3B_6 G3B_7 G3B_8 G3B_9 G3B_10
  G3B_11 G3B_12 G3B_13 G3B_14 G3B_15 G3B_16 G3B_17 G3B_18 G3B_19 .

FREQUENCIES
  D1_1 D1_2 D1_3 D1_4 D1_5 D1_6
  D4 D5   D9_1 D9_2   D11
  E1B_1 E1B_2 E1B_3 E1B_4 E1B_5 E1B_6 E1B_7 E1B_8
    E1B_9 E1B_10 E1B_11 E1B_12 E1B_13 E1B_14 E1B_15
    E1B_16 E1B_17 E1B_18 E1B_19 E1B_20 E1B_21 E1B_22 E1B_23 E1B_24 E1B_25 E1B_26
E1B_27 E1B_28 E1B_29
    E1B_30 E1B_31 E1B_32 E1B_33 E1B_34 E1B_35 E1B_36
  E2_1 E2_2   F1 F2_1 F2_2 F2_3 F2_4 F2_5 F2_6 F3A F3B
  F4_1 F4_2 F4_3 F4_4 F4_5 F4_6 F4_7 F4_8 F4_9 F4_10 F4_11 F4_12 F4_13
  G3B_1 G3B_2 G3B_3 G3B_4 G3B_5 G3B_6 G3B_7 G3B_8 G3B_9 G3B_10
   G3B_11 G3B_12 G3B_13 G3B_14 G3B_15 G3B_16 G3B_17 G3B_18 G3B_19 .
```

```
* ------------------------------------------------.
COUNT EMPLOYED =   D1_1 D1_2 D1_3 D1_4 D1_5 D1_6
  D4 D5
  D9_1 D9_2
  D11
  E1B_1 E1B_2 E1B_3 E1B_4 E1B_5 E1B_6 E1B_7 E1B_8
    E1B_9 E1B_10 E1B_11 E1B_12 E1B_13 E1B_14 E1B_15
    E1B_16 E1B_17 E1B_18 E1B_19 E1B_20 E1B_21 E1B_22 E1B_23 E1B_24 E1B_25 E1B_26
E1B_27 E1B_28 E1B_29
    E1B_30 E1B_31 E1B_32 E1B_33 E1B_34 E1B_35 E1B_36
  E2_1 E2_2
  F1 F2_1 F2_2 F2_3 F2_4 F2_5 F2_6 F3A F3B
  F4_1 F4_2 F4_3 F4_4 F4_5 F4_6 F4_7 F4_8 F4_9 F4_10 F4_11 F4_12 F4_13
  G3B_1 G3B_2 G3B_3 G3B_4 G3B_5 G3B_6 G3B_7 G3B_8 G3B_9 G3B_10
   G3B_11 G3B_12 G3B_13 G3B_14 G3B_15 G3B_16 G3B_17 G3B_18 G3B_19 (1 THRU HI).
RECODE       EMPLOYED (0=0) (1 THRU HI=1).
VALUE LABELS EMPLOYED
 0 "No"
 1 "Yes".
FREQUENCIES  EMPLOYED.
* ------------------------------------------------.
DO REPEAT V=D1_1 D1_2 D1_3 D1_4 D1_5 D1_6
  D4 D5   D9_1 D9_2  D11
  E1B_1 E1B_2 E1B_3 E1B_4 E1B_5 E1B_6 E1B_7 E1B_8
    E1B_9 E1B_10 E1B_11 E1B_12 E1B_13 E1B_14 E1B_15
    E1B_16 E1B_17 E1B_18 E1B_19 E1B_20 E1B_21 E1B_22 E1B_23 E1B_24 E1B_25 E1B_26
E1B_27 E1B_28 E1B_29
    E1B_30 E1B_31 E1B_32 E1B_33 E1B_34 E1B_35 E1B_36
  E2_1 E2_2  F1 F2_1 F2_2 F2_3 F2_4 F2_5 F2_6 F3A F3B
  F4_1 F4_2 F4_3 F4_4 F4_5 F4_6 F4_7 F4_8 F4_9 F4_10 F4_11 F4_12 F4_13
 G3B_1 G3B_2 G3B_3 G3B_4 G3B_5 G3B_6 G3B_7 G3B_8 G3B_9 G3B_10
  G3B_11 G3B_12 G3B_13 G3B_14 G3B_15 G3B_16 G3B_17 G3B_18 G3B_19 .
IF ( EMPLOYED = 0 AND MISSING(V) ) V = -8.
END REPEAT.
```



```
ADD VALUE LABELS
 D1_1 D1_2 D1_3 D1_4 D1_5 D1_6
  D4 D5   D9_1 D9_2  D11
  E1B_1 E1B_2 E1B_3 E1B_4 E1B_5 E1B_6 E1B_7 E1B_8
    E1B_9 E1B_10 E1B_11 E1B_12 E1B_13 E1B_14 E1B_15
    E1B_16 E1B_17 E1B_18 E1B_19 E1B_20 E1B_21 E1B_22 E1B_23 E1B_24 E1B_25 E1B_26
E1B_27 E1B_28 E1B_29
    E1B_30 E1B_31 E1B_32 E1B_33 E1B_34 E1B_35 E1B_36
  E2_1 E2_2  F1 F2_1 F2_2 F2_3 F2_4 F2_5 F2_6 F3A F3B
  F4_1 F4_2 F4_3 F4_4 F4_5 F4_6 F4_7 F4_8 F4_9 F4_10 F4_11 F4_12 F4_13
 G3B_1 G3B_2 G3B_3 G3B_4 G3B_5 G3B_6 G3B_7 G3B_8 G3B_9 G3B_10
  G3B_11 G3B_12 G3B_13 G3B_14 G3B_15 G3B_16 G3B_17 G3B_18 G3B_19
 -8 "Filtered; not employed".

* F4.
DO REPEAT V= F4_1 F4_2 F4_3 F4_4 F4_5 F4_6 F4_7 F4_8 F4_9 F4_10 F4_11 F4_12 .
IF ( F4_13 = 1 AND V=2 ) V = -7.
END REPEAT.
ADD VALUE LABELS
 F4_1 F4_2 F4_3 F4_4 F4_5 F4_6 F4_7 F4_8 F4_9 F4_10 F4_11 F4_12
 -7 "Filtered; appropriate employment".

FREQUENCIES
 F3A F3B
 F4_1 F4_2 F4_3 F4_4 F4_5 F4_6 F4_7 F4_8 F4_9 F4_10 F4_11 F4_12 .


FREQUENCIES
  D1_1 D1_2 D1_3 D1_4 D1_5 D1_6
  D4 D5   D9_1 D9_2   D11
  E1B_1 E1B_2 E1B_3 E1B_4 E1B_5 E1B_6 E1B_7 E1B_8
    E1B_9 E1B_10 E1B_11 E1B_12 E1B_13 E1B_14 E1B_15
    E1B_16 E1B_17 E1B_18 E1B_19 E1B_20 E1B_21 E1B_22 E1B_23 E1B_24 E1B_25 E1B_26
E1B_27 E1B_28 E1B_29
    E1B_30 E1B_31 E1B_32 E1B_33 E1B_34 E1B_35 E1B_36
  E2_1 E2_2   F1 F2_1 F2_2 F2_3 F2_4 F2_5 F2_6 F3A F3B
  F4_1 F4_2 F4_3 F4_4 F4_5 F4_6 F4_7 F4_8 F4_9 F4_10 F4_11 F4_12 F4_13
 G3B_1 G3B_2 G3B_3 G3B_4 G3B_5 G3B_6 G3B_7 G3B_8 G3B_9 G3B_10
  G3B_11 G3B_12 G3B_13 G3B_14 G3B_15 G3B_16 G3B_17 G3B_18 G3B_19 .
```

```
* ------------------------------------------------------.
* 10. Definition of  'Question not asked' .
* ------------------------------------------------------ .
CROSSTABS
  D1_1 D1_2 D1_3 D1_4 D1_5 D1_6
  D4 D5   D9_1 D9_2   D11
  E1B_1 E1B_2 E1B_3 E1B_4 E1B_5 E1B_6 E1B_7 E1B_8
    E1B_9 E1B_10 E1B_11 E1B_12 E1B_13 E1B_14 E1B_15
    E1B_16 E1B_17 E1B_18 E1B_19 E1B_20 E1B_21 E1B_22 E1B_23 E1B_24 E1B_25 E1B_26
E1B_27 E1B_28 E1B_29
    E1B_30 E1B_31 E1B_32 E1B_33 E1B_34 E1B_35 E1B_36
  E2_1 E2_2   F1 F2_1 F2_2 F2_3 F2_4 F2_5 F2_6 F3A F3B
  F4_1 F4_2 F4_3 F4_4 F4_5 F4_6 F4_7 F4_8 F4_9 F4_10 F4_11 F4_12 F4_13
  G3B_1 G3B_2 G3B_3 G3B_4 G3B_5 G3B_6 G3B_7 G3B_8 G3B_9 G3B_10
  G3B_11 G3B_12 G3B_13 G3B_14 G3B_15 G3B_16 G3B_17 G3B_18 G3B_19
 by COUNTRY /MISS=INCL.

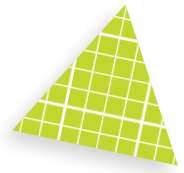
IF (COUNTRY = 4) E2_1 = -1.
IF (COUNTRY = 4) E2_2 = -1.
ADD VALUE LABELS E2_1 E2_2 -1 "Question not asked".
CROSSTABS E2_1 E2_2 by country /MISS=incl.
* ------------------------------------------------------.
IF (COUNTRY = 4) J2_3 = -1.
ADD VALUE LABELS J2_3 -1 "Question not asked".
CROSSTABS        J2_3 by COUNTRY /MISS=incl.

RECODE
 I1 I2 I6A_1 I6A_2 I6A_3 I6A_4 I6B_1 I6B_2 I6B_3 I6B_4
 J1_1 J1_2 J1_3
 J2_1 J2_2 J2_3 J2_4 J2_5 (-4 =-9).
FREQUENCIES
 I1 I2 I6A_1 I6A_2 I6A_3 I6A_4 I6B_1 I6B_2 I6B_3 I6B_4
 J2_1 J2_2 J2_3 J2_4 J2_5 .
```

```
* ----------------------------.
* 11. Definition of DROP-OUTs.
* ----------------------------.

COMPUTE         LASTVALIDVAR = 0.
VARIABLE LABELS LASTVALIDVAR "Last valid variable in the data file".
DO REPEAT V= FIELD B2 B8_1 B8_2 B8_3 B8_4 B8_5 B8_6 B8_7 B8_8 B8_9 B8_10 B8_11 B8_12
B9_1 B9_2 B9_3 B9_4 B9_5
    B9_6 B9_7 B9_8 B9_9 B9_10 B9_11 B9_12 B9_13 B9_14 B9_15 B9_16 B9_17 B9_18 C1_1
C1_2 C1_3 C1_4 C1_5
    C1_6 C4_1 C4_2 C4_3 C4_4 C4_5 C4_6 C4_7 C4_8 C4_9 C4_10 C4_11 C4_12 C5 C6 C7
C10A C10B C10C C10D
    D1_1 D1_2 D1_3 D1_4 D1_5 D1_6 D4 D5 D9_1 D9_2 D11 E1A_1 E1A_2 E1A_3 E1A_4 E1A_5
E1A_6 E1A_7 E1A_8
    E1A_9 E1A_10 E1A_11 E1A_12 E1A_13 E1A_14 E1A_15 E1A_16 E1A_17 E1A_18 E1A_19
E1A_20 E1A_21 E1A_22
    E1A_23 E1A_24 E1A_25 E1A_26 E1A_27 E1A_28 E1A_29 E1A_30 E1A_31 E1A_32 E1A_33
E1A_34 E1A_35 E1A_36
    E1B_1 E1B_2 E1B_3 E1B_4 E1B_5 E1B_6 E1B_7 E1B_8 E1B_9 E1B_10 E1B_11 E1B_12
E1B_13 E1B_14 E1B_15
    E1B_16 E1B_17 E1B_18 E1B_19 E1B_20 E1B_21 E1B_22 E1B_23 E1B_24 E1B_25 E1B_26
E1B_27 E1B_28 E1B_29
    E1B_30 E1B_31 E1B_32 E1B_33 E1B_34 E1B_35 E1B_36 E2_1 E2_2 F1 F2_1 F2_2 F2_3
F2_4 F2_5 F2_6 F3A F3B
    F4_1 F4_2 F4_3 F4_4 F4_5 F4_6 F4_7 F4_8 F4_9 F4_10 F4_11 F4_12 F4_13 G1 G3A_1
G3A_2 G3A_3 G3A_4
    G3A_5 G3A_6 G3A_7 G3A_8 G3A_9 G3A_10 G3A_11 G3A_12 G3A_13 G3A_14 G3A_15 G3A_16
G3A_17 G3A_18 G3A_19
    G3B_1 G3B_2 G3B_3 G3B_4 G3B_5 G3B_6 G3B_7 G3B_8 G3B_9 G3B_10 G3B_11 G3B_12
G3B_13 G3B_14 G3B_15
    G3B_16 G3B_17 G3B_18 G3B_19 I1 I2 I6A_1 I6A_2 I6A_3 I6A_4 I6B_1 I6B_2 I6B_3
I6B_4 J1_1 J1_2 J1_3
    J2_1 J2_2 J2_3 J2_4 J2_5 /VARNUM=1 to 221.
IF ( V GE 0 ) LASTVALIDVAR = VARNUM.
END REPEAT.
FREQ LASTVALIDVAR .
```

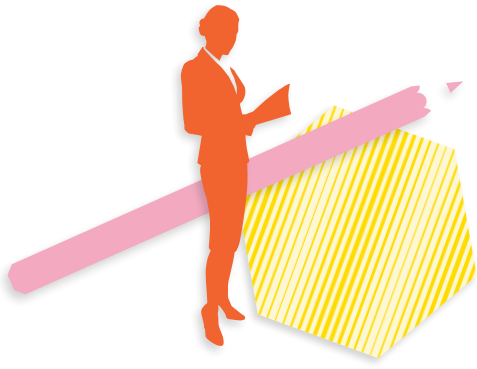
```
DO REPEAT V =   FIELD B2 B8_1 B8_2 B8_3 B8_4 B8_5 B8_6 B8_7 B8_8 B8_9 B8_10 B8_11
B8_12 B9_1 B9_2 B9_3 B9_4 B9_5
    B9_6 B9_7 B9_8 B9_9 B9_10 B9_11 B9_12 B9_13 B9_14 B9_15 B9_16 B9_17 B9_18 C1_1
C1_2 C1_3 C1_4 C1_5
    C1_6 C4_1 C4_2 C4_3 C4_4 C4_5 C4_6 C4_7 C4_8 C4_9 C4_10 C4_11 C4_12 C5 C6 C7
C10A C10B C10C C10D
    D1_1 D1_2 D1_3 D1_4 D1_5 D1_6 D4 D5 D9_1 D9_2 D11 E1A_1 E1A_2 E1A_3 E1A_4 E1A_5
E1A_6 E1A_7 E1A_8
    E1A_9 E1A_10 E1A_11 E1A_12 E1A_13 E1A_14 E1A_15 E1A_16 E1A_17 E1A_18 E1A_19
E1A_20 E1A_21 E1A_22
    E1A_23 E1A_24 E1A_25 E1A_26 E1A_27 E1A_28 E1A_29 E1A_30 E1A_31 E1A_32 E1A_33
E1A_34 E1A_35 E1A_36
    E1B_1 E1B_2 E1B_3 E1B_4 E1B_5 E1B_6 E1B_7 E1B_8 E1B_9 E1B_10 E1B_11 E1B_12
E1B_13 E1B_14 E1B_15
    E1B_16 E1B_17 E1B_18 E1B_19 E1B_20 E1B_21 E1B_22 E1B_23 E1B_24 E1B_25 E1B_26
E1B_27 E1B_28 E1B_29
    E1B_30 E1B_31 E1B_32 E1B_33 E1B_34 E1B_35 E1B_36 E2_1 E2_2 F1 F2_1 F2_2 F2_3
F2_4 F2_5 F2_6 F3A F3B
    F4_1 F4_2 F4_3 F4_4 F4_5 F4_6 F4_7 F4_8 F4_9 F4_10 F4_11 F4_12 F4_13 G1 G3A_1
G3A_2 G3A_3 G3A_4
    G3A_5 G3A_6 G3A_7 G3A_8 G3A_9 G3A_10 G3A_11 G3A_12 G3A_13 G3A_14 G3A_15 G3A_16
G3A_17 G3A_18 G3A_19
    G3B_1 G3B_2 G3B_3 G3B_4 G3B_5 G3B_6 G3B_7 G3B_8 G3B_9 G3B_10 G3B_11 G3B_12
G3B_13 G3B_14 G3B_15
    G3B_16 G3B_17 G3B_18 G3B_19 I1 I2 I6A_1 I6A_2 I6A_3 I6A_4 I6B_1 I6B_2 I6B_3
I6B_4 J1_1 J1_2 J1_3
     / VARNUM =1 to 216.
IF ( (VALUE(V)  = -9 ) AND (LASTVALIDVAR < VARNUM)) V = -4 .
END REPEAT.
```

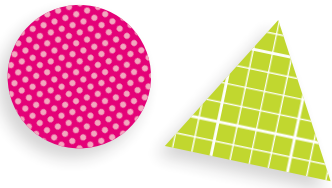


```
ADD VALUE LABELS
 FIELD B2 B8_1 B8_2 B8_3 B8_4 B8_5 B8_6 B8_7 B8_8 B8_9 B8_10 B8_11 B8_12 B9_1 B9_2
B9_3 B9_4 B9_5
    B9_6 B9_7 B9_8 B9_9 B9_10 B9_11 B9_12 B9_13 B9_14 B9_15 B9_16 B9_17 B9_18 C1_1
C1_2 C1_3 C1_4 C1_5
    C1_6 C4_1 C4_2 C4_3 C4_4 C4_5 C4_6 C4_7 C4_8 C4_9 C4_10 C4_11 C4_12 C5 C6 C7
C10A C10B C10C C10D
    D1_1 D1_2 D1_3 D1_4 D1_5 D1_6 D4 D5 D9_1 D9_2 D11 E1A_1 E1A_2 E1A_3 E1A_4 E1A_5
E1A_6 E1A_7 E1A_8
    E1A_9 E1A_10 E1A_11 E1A_12 E1A_13 E1A_14 E1A_15 E1A_16 E1A_17 E1A_18 E1A_19
E1A_20 E1A_21 E1A_22
    E1A_23 E1A_24 E1A_25 E1A_26 E1A_27 E1A_28 E1A_29 E1A_30 E1A_31 E1A_32 E1A_33
E1A_34 E1A_35 E1A_36
    E1B_1 E1B_2 E1B_3 E1B_4 E1B_5 E1B_6 E1B_7 E1B_8 E1B_9 E1B_10 E1B_11 E1B_12
E1B_13 E1B_14 E1B_15
    E1B_16 E1B_17 E1B_18 E1B_19 E1B_20 E1B_21 E1B_22 E1B_23 E1B_24 E1B_25 E1B_26
E1B_27 E1B_28 E1B_29
    E1B_30 E1B_31 E1B_32 E1B_33 E1B_34 E1B_35 E1B_36 E2_1 E2_2 F1 F2_1 F2_2 F2_3
F2_4 F2_5 F2_6 F3A F3B
    F4_1 F4_2 F4_3 F4_4 F4_5 F4_6 F4_7 F4_8 F4_9 F4_10 F4_11 F4_12 F4_13 G1 G3A_1
G3A_2 G3A_3 G3A_4
    G3A_5 G3A_6 G3A_7 G3A_8 G3A_9 G3A_10 G3A_11 G3A_12 G3A_13 G3A_14 G3A_15 G3A_16
G3A_17 G3A_18 G3A_19
    G3B_1 G3B_2 G3B_3 G3B_4 G3B_5 G3B_6 G3B_7 G3B_8 G3B_9 G3B_10 G3B_11 G3B_12
G3B_13 G3B_14 G3B_15
    G3B_16 G3B_17 G3B_18 G3B_19 I1 I2 I6A_1 I6A_2 I6A_3 I6A_4 I6B_1 I6B_2 I6B_3
I6B_4 J1_1 J1_2 J1_3
    J2_1 J2_2 J2_3 J2_4 J2_5
 -4 "Drop-out".
```

```
* 12. FREQUENCIES.

FREQUENCIES
 FIELD B2 B8_1 B8_2 B8_3 B8_4 B8_5 B8_6 B8_7 B8_8 B8_9 B8_10 B8_11 B8_12 B9_1 B9_2
B9_3 B9_4 B9_5
    B9_6 B9_7 B9_8 B9_9 B9_10 B9_11 B9_12 B9_13 B9_14 B9_15 B9_16 B9_17 B9_18 C1_1
C1_2 C1_3 C1_4 C1_5
    C1_6 C4_1 C4_2 C4_3 C4_4 C4_5 C4_6 C4_7 C4_8 C4_9 C4_10 C4_11 C4_12 C5 C6 C7
C10A C10B C10C C10D
    D1_1 D1_2 D1_3 D1_4 D1_5 D1_6 D4 D5 D9_1 D9_2 D11 E1A_1 E1A_2 E1A_3 E1A_4 E1A_5
E1A_6 E1A_7 E1A_8
    E1A_9 E1A_10 E1A_11 E1A_12 E1A_13 E1A_14 E1A_15 E1A_16 E1A_17 E1A_18 E1A_19
E1A_20 E1A_21 E1A_22
    E1A_23 E1A_24 E1A_25 E1A_26 E1A_27 E1A_28 E1A_29 E1A_30 E1A_31 E1A_32 E1A_33
E1A_34 E1A_35 E1A_36
    E1B_1 E1B_2 E1B_3 E1B_4 E1B_5 E1B_6 E1B_7 E1B_8 E1B_9 E1B_10 E1B_11 E1B_12
E1B_13 E1B_14 E1B_15
    E1B_16 E1B_17 E1B_18 E1B_19 E1B_20 E1B_21 E1B_22 E1B_23 E1B_24 E1B_25 E1B_26
E1B_27 E1B_28 E1B_29
    E1B_30 E1B_31 E1B_32 E1B_33 E1B_34 E1B_35 E1B_36 E2_1 E2_2 F1 F2_1 F2_2 F2_3
F2_4 F2_5 F2_6 F3A F3B
    F4_1 F4_2 F4_3 F4_4 F4_5 F4_6 F4_7 F4_8 F4_9 F4_10 F4_11 F4_12 F4_13 G1 G3A_1
G3A_2 G3A_3 G3A_4
    G3A_5 G3A_6 G3A_7 G3A_8 G3A_9 G3A_10 G3A_11 G3A_12 G3A_13 G3A_14 G3A_15 G3A_16
G3A_17 G3A_18 G3A_19
    G3B_1 G3B_2 G3B_3 G3B_4 G3B_5 G3B_6 G3B_7 G3B_8 G3B_9 G3B_10 G3B_11 G3B_12
G3B_13 G3B_14 G3B_15
    G3B_16 G3B_17 G3B_18 G3B_19 I1 I2 I6A_1 I6A_2 I6A_3 I6A_4 I6B_1 I6B_2 I6B_3
I6B_4 J1_1 J1_2 J1_3
    J2_1 J2_2 J2_3 J2_4 J2_5 .
* ------------------------------------------------------.
```





```
* 13. DESCRIPTIVES.

DESCRIPTIVES
 FIELD B2 B8_1 B8_2 B8_3 B8_4 B8_5 B8_6 B8_7 B8_8 B8_9 B8_10 B8_11 B8_12 B9_1 B9_2
B9_3 B9_4 B9_5
    B9_6 B9_7 B9_8 B9_9 B9_10 B9_11 B9_12 B9_13 B9_14 B9_15 B9_16 B9_17 B9_18 C1_1
C1_2 C1_3 C1_4 C1_5
    C1_6 C4_1 C4_2 C4_3 C4_4 C4_5 C4_6 C4_7 C4_8 C4_9 C4_10 C4_11 C4_12 C5 C6 C7
C10A C10B C10C C10D
    D1_1 D1_2 D1_3 D1_4 D1_5 D1_6 D4 D5 D9_1 D9_2 D11 E1A_1 E1A_2 E1A_3 E1A_4 E1A_5
E1A_6 E1A_7 E1A_8
    E1A_9 E1A_10 E1A_11 E1A_12 E1A_13 E1A_14 E1A_15 E1A_16 E1A_17 E1A_18 E1A_19
E1A_20 E1A_21 E1A_22
    E1A_23 E1A_24 E1A_25 E1A_26 E1A_27 E1A_28 E1A_29 E1A_30 E1A_31 E1A_32 E1A_33
E1A_34 E1A_35 E1A_36
    E1B_1 E1B_2 E1B_3 E1B_4 E1B_5 E1B_6 E1B_7 E1B_8 E1B_9 E1B_10 E1B_11 E1B_12
E1B_13 E1B_14 E1B_15
    E1B_16 E1B_17 E1B_18 E1B_19 E1B_20 E1B_21 E1B_22 E1B_23 E1B_24 E1B_25 E1B_26
E1B_27 E1B_28 E1B_29
    E1B_30 E1B_31 E1B_32 E1B_33 E1B_34 E1B_35 E1B_36 E2_1 E2_2 F1 F2_1 F2_2 F2_3
F2_4 F2_5 F2_6 F3A F3B
    F4_1 F4_2 F4_3 F4_4 F4_5 F4_6 F4_7 F4_8 F4_9 F4_10 F4_11 F4_12 F4_13 G1 G3A_1
G3A_2 G3A_3 G3A_4
    G3A_5 G3A_6 G3A_7 G3A_8 G3A_9 G3A_10 G3A_11 G3A_12 G3A_13 G3A_14 G3A_15 G3A_16
G3A_17 G3A_18 G3A_19
    G3B_1 G3B_2 G3B_3 G3B_4 G3B_5 G3B_6 G3B_7 G3B_8 G3B_9 G3B_10 G3B_11 G3B_12
G3B_13 G3B_14 G3B_15
    G3B_16 G3B_17 G3B_18 G3B_19 I1 I2 I6A_1 I6A_2 I6A_3 I6A_4 I6B_1 I6B_2 I6B_3
I6B_4 J1_1 J1_2 J1_3
    J2_1 J2_2 J2_3 J2_4 J2_5 .
* ------------------------------------------------------.
* 14. New variables
* ------------------------------------------------------.
INCLUDE FILE = "Data_TSVET_2014_new_variables.sps".
* ------------------------------------------------------.

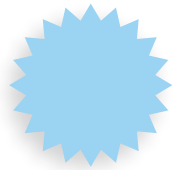
* 15. SAVE the cleaned data.
* ---------------------------------------------------------------------.
SAVE OUTFILE = "D:\TSVET_2014\DATA\Data_TSVET_2014_cleaned_data.sav".
DATASET NAME TS2014 WINDOW=FRONT.
* ---------------------------------------------------------------------.
```

ANNEX 5.
Building of new variables (SPSS syntax)

```
* ---------------------------------.
* Data_TSVET_2014_new_variables.sps .
* ---------------------------------.

*********************************************************.
******** NEW VARIABLES ********************************.
*********************************************************.

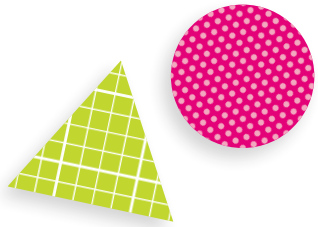
* ------------------------------------------------------------.
* --New break variable: FIELDGENDER Field of study and gender.
* ------------------------------------------------------------.
FREQUENCIES         FIELD I1.
COMPUTE             FIELDGENDER = FIELD*10 + I1.
VARIABLE LABELS     FIELDGENDER "Field of study and gender".
RECODE              FIELDGENDER
 (11=1)
 (12=2)
 (21=3)
 (22=4)
 (31=5)
 (32=6)
 (sysmis=-9).
VALUE LABELS        FIELDGENDER
 1 Hum-M
 2 Hum-F
 3 Sci-M
 4 Sci-F
 5 Eng-M
 6 Eng-F.
MISSING VALUES      FIELDGENDER (-9 thru -1).
FORMATS             FIELDGENDER (F4.0).
FREQUENCIES         FIELDGENDER.
```



Extract from SPSS OUTPUT

FIELDGENDER Field of study and gender					
		Frequency	**Percent**	**Valid Percent**	**Cumulative Percent**
Valid	1 Hum-M	151	11.2	11.2	11.2
	2 Hum-F	345	25.6	25.6	36.8
	3 Sci-M	129	9.6	9.6	46.4
	4 Sci-F	114	8.5	8.5	54.9
	5 Eng-M	445	33.0	33.1	88.0
	6 Eng-F	162	12.0	12.0	100.0
	Total	1 346	99.9	100.0	
Missing	-9 no answer	1	.1		
Total		1 347	100.0		

```
* ------------------------------------------------------.
* Classification of metric variables
* ------------------------------------------------------.
* ------------------------------------------------------.
* C7_CL Duration of job search
* ------------------------------------------------------.
COMPUTE C7_CL = VALUE( C7).
APPLY DICTIONARY FROM *
 /SOURCE VARIABLES =  C7
 /TARGET VARIABLES =  C7_CL
 /VARINFO LEVEL MISSING FORMAT VARLABEL VALLABELS = REPLACE.
FREQUENCIES           C7_CL .
RECODE                C7_CL
 (1 THRU 3 = 1)
 (4 THRU 6 = 2)
 (7 THRU 9 = 3)
 (10 THRU 12 = 4)
 (13 THRU HI = 5).
ADD VALUE LABELS    C7_CL
 1 "1 to 3 months"
 2 "4 to 6 months"
 3 "7 to 9 months"
 4 "10 to 12 months"
 5 "More than 12 months"
.
FREQUENCIES           C7_CL .
```



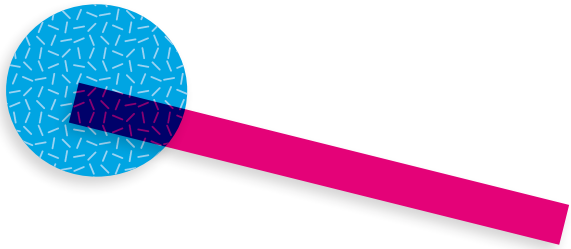
Extract from SPSS OUTPUT

C7_CL Duration of job search					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1 1 to 3 months	310	23.0	38.8	38.8
	2 4 to 6 months	240	17.8	30.1	68.9
	3 7 to 9 months	84	6.2	10.5	79.4
	4 10 to 12 months	85	6.3	10.7	90.1
	5 More than 12 months	79	5.9	9.9	100.0
	Total	798	59.2	100.0	
Missing	-9 No answer	110	8.2		
	-8 Filtered; no job search	439	32.6		
	Total	549	40.8		
Total		1 347	100.0		

```
* ----------------------------------.
* Example of building index variables.
* ----------------------------------.
```

B8 exploratory factor analysis

```
FACTOR
  /VARIABLES
     B8_1 B8_2 B8_3 B8_4 B8_5 B8_6
     B8_7 B8_8 B8_9 B8_10 B8_11 B8_12
   /MISSING PAIRWISE
  /ANALYSIS
     B8_1 B8_2 B8_3 B8_4 B8_5 B8_6
     B8_7 B8_8 B8_9 B8_10 B8_11 B8_12
   /PRINT UNIVARIATE INITIAL EXTRACTION ROTATION FSCORE
  /FORMAT SORT BLANK(.45)
  /EXTRACTION PC
  /CRITERIA MINEIGEN(1) ITERATE(50)
  /ROTATION VARIMAX
  /METHOD=CORRELATION.
```



Extract from SPSS OUTPUT

Rotated Component Matrix[a]				
	Component			
	1	2	3	4
B8_8 Project and problem-based learning	.681			
B8_9 Direct acquisition of work experience	.657			
B8_10 Out-of-class communication between students and staff	.606			
B8_12 Detailed regular assessment of academic progress	.598			
B8_3 Attitudes and socio-communicative skills	.504			
B8_5 Regular class attendance		.691		
B8_6 Teacher as the main source of information and understanding		.671		
B8_11 Writing a thesis		.540		
B8_7 Freedom to choose courses and areas of specialisation			.682	
B8_4 Independent learning			.626	
B8_2 Theories, concepts or paradigms				.772
B8_1 Facts and instrumental knowledge	.506			.596
Extraction Method: Principal Component Analysis. Rotation Method: Varimax with Kaiser Normalization				
[a]Rotation converged in 10 iterations.				

B9 exploratory factor analysis

```
FACTOR
  /VARIABLES
    B9_1 B9_2 B9_3 B9_4 B9_5 B9_6 B9_7 B9_8
    B9_9 B9_10 B9_11 B9_12 B9_13 B9_14 B9_15 B9_16
    B9_17 B9_18
  /MISSING PAIRWISE
  /ANALYSIS
    B9_1 B9_2 B9_3 B9_4 B9_5 B9_6 B9_7 B9_8
    B9_9 B9_10 B9_11 B9_12 B9_13 B9_14 B9_15 B9_16
    B9_17 B9_18
   /PRINT UNIVARIATE INITIAL EXTRACTION ROTATION FSCORE
  /FORMAT SORT BLANK(.45)
  /EXTRACTION PC
  /CRITERIA MINEIGEN(1) ITERATE(50)
  /ROTATION VARIMAX
  /METHOD=CORRELATION.
```

Extract from SPSS OUTPUT

Rotated Component Matrix[a]					
	Component				
	1	2	3	4	5
B9_4 Variety of courses offered	.824				
B9_7 Opportunity to choose courses and areas of specialisation	.737				
B9_5 Design of degree programme	.604				
B9_3 Course content of major	.589				
B9_9 Teaching quality	.470				
B9_2 Assistance/advice for your final examination		.761			
B9_1 Academic advice offered in general		.721			
B9_8 Practical emphasis of teaching and learning		.519			
B9_6 Testing/grading system	.474	.490			
B9_16 Equipment and stocking of libraries			.804		
B9_17 Supply of teaching material			.787		
B9_18 Quality of technical equipment (e.g. PC, measuring instruments, etc.)			.710		
B9_10 Chances to participate in research projects				.851	
B9_11 Research emphasis of teaching and learning				.793	
B9_12 Provision of work placements and other work experience				.509	
B9_14 Contacts with fellow students					.847
B9_15 Chance for students to have an impact on university policies					.558
B9_13 Opportunity for out-of-class contacts with teaching staff		.529			.530
Extraction Method: Principal Component Analysis. Rotation Method: Varimax with Kaiser Normalization					
[a]Rotation converged in 6 iterations.					

```
* ------------------------------------------------------------.
* Study provisions: Practice - 6 Items
* ------------------------------------------------------------.

B8_8 Project and problem-based learning
B8_9 Direct acquisition of work experience
B8_10 Out-of-class communication between students and staff
B8_12 Detailed regular assessment of academic progress
B8_3 Attitudes and socio-communicative skills
B8_1 Facts and instrumental knowledge

COMPUTE  ST_PRACTICE = MEAN.2 (B8_8, B8_9, B8_10, B8_12, B8_3, B8_1).
* ------------------------------------------------------------.
* Alpha  6.7 .
RELIABILITY
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  /SUMMARY=TOTAL
  /ICC=MODEL(MIXED) TYPE(CONSISTENCY) CIN=95 TESTVAL=0.

* ------------------------------------------------------------.
* Study provisions: Content - 5 Items
* ------------------------------------------------------------.
*
 B9_4 Variety of courses offered
 B9_7 Opportunity to choose courses and areas of specialisation
 B9_5 Design of degree programme
 B9_3 Course content of major
 B9_9 Teaching quality .

COMPUTE  ST_CONTENT = MEAN.2 (B9_4, B9_7, B9_5, B9_3, B9_9).
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* ------------------------------------------------------------.
* Alpha  7.6.
RELIABILITY
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  /STATISTICS=DESCRIPTIVE HOTELLING TUKEY
  /SUMMARY=TOTAL
  /ICC=MODEL(MIXED) TYPE(CONSISTENCY) CIN=95 TESTVAL=0.

* ------------------------------------------------------------.
* Study provisions: Student centred -
B9_2 Assistance/advice for your final examination
B9_1 Academic advice offered in general
B9_8 Practical emphasis of teaching and learning
B9_6 Testing/grading system
B9_13 Opportunity of out-of-class contacts with teaching staff
.
COMPUTE  ST_STUDENT = MEAN.2 (B9_2, B9_1, B9_8, B9_13, B9_6).
* Alpha  7.4.
RELIABILITY
  /VARIABLES= B9_2, B9_1, B9_8, B9_13, B9_6
  /SCALE('ST_STUDENT') ALL
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  /STATISTICS=DESCRIPTIVE HOTELLING TUKEY
  /SUMMARY=TOTAL
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VARIABLE LABELS
  ST_PRACTICE "Study conditions: practice oriented"
  ST_CONTENT  "Study conditions: content/quality"
  ST_STUDENT  "Study conditions: student centered".
VALUE LABELS
 ST_PRACTICE ST_CONTENT ST_STUDENT
 1 "Very low/bad"
 5 "Very high/good" .
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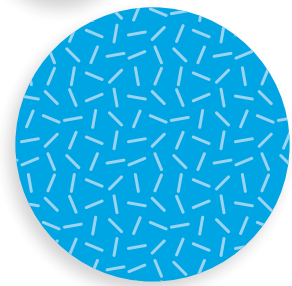

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FORMATS
 ST_PRACTICE ST_CONTENT ST_STUDENT (F4.1).
RECODE
 ST_PRACTICE ST_CONTENT ST_STUDENT (sysmis=-9).
MISSING VALUES
 ST_PRACTICE ST_CONTENT ST_STUDENT (-9 THRU -1).
FREQUENCIES
  ST_PRACTICE ST_CONTENT ST_STUDENT .
DESCRIPTIVES
 ST_PRACTICE B8_8, B8_9, B8_10, B8_12, B8_3, B8_1
 ST_CONTENT  B9_4, B9_7, B9_5, B9_3, B9_9
 ST_STUDENT  B9_2, B9_1, B9_8, B9_13, B9_6 .


* Examples of further analysis

* ------------------------------------------------------------.
CORRELATIONS
 ST_PRACTICE ST_CONTENT ST_STUDENT.
* ------------------------------------------------------------.

CORRELATIONS
  E1A_1 E1A_2 E1A_3 E1A_4 E1A_5 E1A_6 E1A_7 E1A_8 E1A_9 E1A_10 E1A_11 E1A_12 E1A_13
E1A_14 E1A_15
    E1A_16 E1A_17 E1A_18 E1A_19 E1A_20 E1A_21 E1A_22 E1A_23 E1A_24 E1A_25 E1A_26
E1A_27 E1A_28 E1A_29
    E1A_30 E1A_31 E1A_32 E1A_33 E1A_34 E1A_35 E1A_36
 WITH
  ST_PRACTICE ST_CONTENT ST_STUDENT.
* ------------------------------------------------------------.


CORRELATIONS
 C6 C7 D11 E2_1 E2_2 F1 F3A F3B
 G1
 G3B_1 G3B_2 G3B_3 G3B_4 G3B_5 G3B_6 G3B_7 G3B_8 G3B_9 G3B_10
 G3B_11 G3B_12 G3B_13 G3B_14 G3B_15
    G3B_16 G3B_17 G3B_18 G3B_19
 WITH
  ST_PRACTICE ST_CONTENT ST_STUDENT.
* ------------------------------------------------------------.
```

```
* SKILL MATCH and study conditions.
* without JAPAN.
REGRESSION
  /DESCRIPTIVES MEAN STDDEV CORR SIG N
  /MISSING LISTWISE
  /STATISTICS COEFF OUTS R ANOVA CHANGE ZPP
  /CRITERIA=PIN(.05) POUT(.10)
  /NOORIGIN
  /DEPENDENT E2_1
  /METHOD=ENTER ST_PRACTICE ST_CONTENT ST_STUDENT.

* SKILL MATCH and study conditions.
* without JAPAN.
REGRESSION
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  /MISSING LISTWISE
  /STATISTICS COEFF OUTS R ANOVA CHANGE ZPP
  /CRITERIA=PIN(.05) POUT(.10)
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  /DEPENDENT E2_1
  /METHOD=STEPWISE
  B8_1 B8_2 B8_3 B8_4 B8_5 B8_6 B8_7 B8_8 B8_9 B8_10 B8_11 B8_12
  B9_1 to B9_18.


* SKILL MATCH and study conditions.
* without JAPAN.
REGRESSION
  /DESCRIPTIVES MEAN STDDEV CORR SIG N
  /MISSING LISTWISE
  /STATISTICS COEFF OUTS R ANOVA CHANGE ZPP
  /CRITERIA=PIN(.05) POUT(.10)
  /NOORIGIN
  /DEPENDENT F1
  /METHOD=ENTER ST_PRACTICE ST_CONTENT ST_STUDENT.
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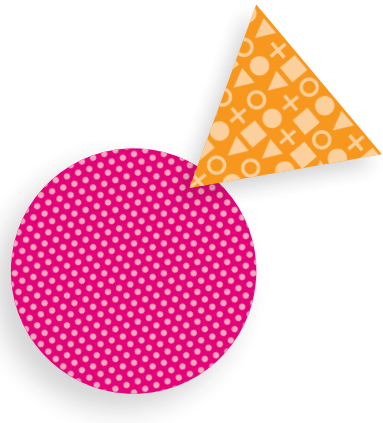

This guide is a part of the ETF, ILO and Cedefop series of guides on skills anticipation and matching. All the guides follow a common structure, although they vary in level of detail, technical content and case studies. The ETF, Cedefop and the ILO worked closely together to develop the guides, usually 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 tracer studies and aims to contribute to the improvement of education in TVET and higher education through high-quality graduate surveys or tracer studies. The key objective of such studies is to identify the relevance of education/training for transition to a job and further vocational career in the first years after graduating.

Many countries are experiencing growing demand for tracer studies due to the requirements of accreditation and quality management. Education institutions are often forced by law to implement regular tracer studies and there is demand from donor agencies for empirical evidence about the relevance of the education/training they sponsor.

The main audience for this guide is those in education institutions who are going to organise and implement their own tracer studies (institutional tracer studies). It is also targeted at users in various categories: policy- and decision-makers; research centres and expert networks involved/engaged in carrying out tracer studies for clients; and associations and networks with interest in evidence offered by tracer studies. The reader will obtain detailed guidance on how to design a tracer study, develop a questionnaire and carry out data analysis, without being an expert in survey methodology.

EU law and publications

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