

# Measuring Intangible Investment

## **A Guide to Improving the Quality of Training Statistics for Comparative Analysis: Conceptual, Measurement and Survey Issues (Overview of the Guide)**

*by*

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## TABLE OF CONTENTS

A GUIDE TO IMPROVING THE QUALITY OF TRAINING STATISTICS FOR COMPARATIVE ANALYSIS: CONCEPTUAL, MEASUREMENT AND SURVEY ISSUES (OVERVIEW OF THE GUIDE) .....	3
Background .....	3
Primary objectives of the manual .....	5
Guide to the manual .....	5
Conclusion .....	10
NOTES .....	11

# **A GUIDE TO IMPROVING THE QUALITY OF TRAINING STATISTICS FOR COMPARATIVE ANALYSIS: CONCEPTUAL, MEASUREMENT AND SURVEY ISSUES (OVERVIEW OF THE GUIDE)**

## **Background**

Recognition of the importance of human capital in the development of modern economies is widespread. It is commonplace today to treat education and training on the same level as physical capital in explaining economic growth factors. "Education" is now seen as a branch of economic policy, rather than a mix of social, economic and cultural policy.<sup>1</sup>

Determining the effects of human capital formation is problematic, given how difficult they are to measure. OECD works have noted that it is essential to "bring together existing data and measures of human capital investment and its impact."<sup>2</sup> It is therefore necessary to develop an improved system of indicators to measure employer-based training and its impacts.

Before pinpointing the main deficiencies which arise in measuring training, it is necessary to distinguish between funding and delivery of training -- two concepts which are quite distinct. Entities which fund training include governments, employers, private bodies, households and individuals, and charitable and welfare organisations. The training funded may, however, be delivered by publicly funded training institutions, commercial training providers or themselves.

National training statistics are most comprehensive for training delivered via publicly funded training institutions. Data from publicly funded institutions of further and higher education are therefore usually readily available. (Indeed, the coverage of individuals, organisations and the community in the measurement and record-keeping of human capital stocks and flows tends to be sourced from the education supply side through recording educational attendance and course completions.)

National training statistics are generally less comprehensive in the information they provide on training delivered by employers, commercial training providers and individuals, so that at best the addition to human capital flowing from training is treated fragmentarily. Levels of accounting provisions, the diffuse nature, conceptual and measurement issues, differing levels of respondent comprehension, and difficulties in determining training outcomes are some of the factors which have impeded the collection of such data. It is against this background that the need for this manual arises.

Training by employers is particularly important, since they often comprise the largest single source of continuing training. Attempts, however, to measure employers' training tend to focus on formal training only and omit informal training. Traditionally, informal training by employers has been important for:

- the job training of the lower part of the occupational hierarchy, where many skills are learnt cost-effectively on-the-job; and

- the training in smaller organisations, where the limited number of workers makes formal training impossible, since it usually takes place off-the-job.

The importance of informal training is growing as it plays an increasing role in job training in the upper part of the occupational hierarchy and in larger organisations. One reason for this may be that the growing proportion of employees requiring training, as a consequence of widespread and ongoing technological and structural change, has made heavy reliance on formal training too costly for employers.

Measuring formal training by employers does not necessarily correctly appraise total delivery of training. The omission of informal training appraisals not only leads to inadequate measures of national training, it also inhibits valid international and intranational comparisons of training, since the mix of formal and informal training by employers varies across countries, sectors, industries, organisations of different sizes and occupations.

National training statistics are also often inadequate in measuring the training of commercial training providers. In countries with, or seeking to acquire, a highly developed private training sector, the training delivered by commercial training providers is, or has the potential to become, an important component of national training.

National training statistics do not usually provide comprehensive measures of the training by individuals. An important gap forms through the training individuals receive outside the workplace and the formal education system at their own expense and in their own time. Possibly, the importance of training of this type is growing along with the increase in video-, television- and computer-based training in the home. Another important gap in the statistics arises from that component of the labour force which is self-employed or in non-standard or casual employment. Little is generally known about the training of this group, since they are generally outside the scope of employer or employee training surveys.

Statistics on the volume and costs of training are input-based: they show the amount of training delivered in units of time or its cost in money. Other areas in which input-based training statistics tend to be deficient include: employer and individual attitudes to training and investment in training, and the training practices adopted by employers and others made available through innovations in information technology.

Statistics on training outputs are the most fragmentary. They display influence of training on organisations in terms of their productivity, sales and profitability, and on individuals in terms of employment and labour market earnings. The combined effect of these various deficiencies make it difficult for any given country to:

- gain a comprehensive understanding of its national training system;
- determine the overall level of training;
- judge if the training delivered by the various players is effective, appropriate and balanced;
- ascertain the impact of training on productivity and growth;
- assess how equitable access to, and participation in, training is;
- formulate effective training policies; and
- monitor the attainment of training goals and objectives.

## **Primary objectives of the manual**

This manual is concerned with helping OECD countries to better measure training and to improve the reliability, accuracy, transparency and comparability of the training data they collect.

The primary objective is to provide guidance on collecting data on training delivered in the private and public sector. As mentioned in other OECD papers, “there is simply no generally recognised or standardized definition of types of enterprise training.”<sup>3</sup> However, while the primary focus is upon employer-based training, there is also a secondary focus on the individual, since individuals constitute the trainees. As the manual shows, comprehensive measures of employer-based training cannot be derived without reference to employees.<sup>4</sup>

The focus of the manual is collecting data on:

- the volume of formal and informal training that employers deliver;
- the volume of formal and informal training that individuals receive; and
- the costs of formal and informal training to employers and individuals.

These measures include “first-generation” types of training data.<sup>5</sup> They are the most basic training data, and need to be answered accurately in well-constructed collections. They form the nucleus for more extensive training data collections and analysis.

Measuring the volume and cost of training provides little information unless related to the nature of the training delivered and received, and the characteristics of those delivering and receiving the training. The manual therefore provides outlines for delineating various types of training and classifiers for identifying employers and individuals. It also discusses the problems inherent in delineating particular forms of training and determining employer characteristics.

The manual is mainly intended for use in national statistical agencies whose responsibility it is to conduct training surveys. The manual will also be of use to:

- those in government and private organisations who commission training surveys and wish to better understand the issues and processes involved; and
- any other agencies involved in collecting training data via survey, administrative data sources or case studies.

While issues involved in measuring the volume and costs of training via survey are emphasized, the conceptual framework, Chapter 4 and Appendix F provide the framework necessary to adopt a case-study approach.

## **Guide to the manual**

The manual may be treated as a reference source or a “recipe book”, where selected chapters or sections will assist in the development of a training data collection via survey. However, it is also relevant to administrative data sources and case studies which may prove, in some instances, a more valuable source of training data. The definitions and measures discussed here may also be used in a non-survey context. There is also scope for adapting the manual to include definitions and measures that encompass non-vocational training.

The manual contains four main sections. Section One comprises Chapters 2 and 3 and contains the conceptual framework. Section Two comprises Chapters 4, 5 and 6 and treats the delineation and measurement of training. Chapters 7, 8, 9 and 10 comprise Section Three and discuss data collection issues. The glossary of training terms is found in the fourth section. Practitioners can draw on the links between the various sections. To assist this process, endnotes point to other parts of the manual requiring consideration.

Although the manual moves from a discussion of the conceptual framework to empirical measurement issues and finally to practical data considerations, users may wish to begin with Chapter 7, which sets out the initial phases in the development of a training data collection, or simply “dip” into those areas that are of immediate interest. It has not adopted a prescriptive approach, but sets out the options available to survey designers and users, the main reason for this being the variety of restrictive and unique factors which make the surveying of training a different process from country to country.<sup>6</sup>

### *Chapters 2 and 3*

Chapters 2 and 3 provide a conceptual framework which identifies the nature and forms of vocational training and the elements comprising its volume and cost. This conceptual framework applies to *both* an employer’s and an individual’s formal and informal training. It is necessary to note that the conceptual framework is an analytical construct intended to guide, inform and appraise empirical measurement, but is *not* a practical measuring device. Because of this, these conceptual chapters make no reference to the practical problems inherent in distinguishing the various forms and structures of vocational training or measuring particular elements or components. Treatment of these issues is deferred until subsequent chapters.

Chapter 2 treats the nature and forms of vocational training. It defines vocational training; discusses its processes and outcomes; specifies criteria for delineating vocational training’s structural forms; and applies these criteria to distinguish unstructured training (which includes informal training) and structured, highly structured and very highly structured training (which includes formal training). These structural forms are tabulated in Appendix A.

Chapter 3 treats the elements comprising the volume and cost of vocational training. Given the focus of the manual, the discussion of training costs relates to those an employer incurs in providing training and those an individual incurs in undertaking training, while the discussion of the volume of training relates to the amount of training an employer delivers or an individual receives. The main purpose of Chapter 3 is to provide the concepts necessary to inform the empirical measurement of an employer’s and an individual’s costs and volume of training. It is subsequently shown, in Chapters 5 and 6, that some elements of training are impervious to empirical measurement, while other elements can only be estimated. By enabling omissions and approximations to be identified, the conceptual framework contained in Chapter 3 also provides a means of determining the extent to which empirical measures of training deviate from true measures of training.

Three appendices supplement Chapter 3: Appendix B, which notes the forms the acquisition costs of training facilities may assume; Appendix C, which presents some basic definitions of an employer’s training costs; and Appendix D, which lists ways in which organisations and individuals may be identified.

## **Chapter 4**

Chapter 4 deals with that complex and perennial issue that has plagued training collections -- what is training? One important problem with measuring training is its definition. Since training takes on various guises and frequently merges into other activities, the delineation of training faces a number of difficulties, including difficulties in distinguishing:

- vocational training from other activities, such as education, non-vocational training, post-training skills development, output, consumption, intangible investments, etc.;
- one type of vocational training from another type, such as initial from continuing training, specific from general training, internal from external training, etc.;
- the structural forms of training; and
- one training process from another, such as self-directed learning from learning by “figuring things out”.

Chapter 4 considers how these distinctions might be made and the difficulties some of these distinctions entail. Appendix D lists training descriptors.

## **Chapter 5**

Chapter 5 examines the extent to which an organisation’s volume and costs of training can be measured via employer and employee training surveys. While a distinction is drawn between problems inherent in the *measurement* of training and those inherent in the *collection* of training data, measurement issues cannot be considered in isolation from collection issues. This chapter indicates how comprehensively an organisation’s volume and costs of training may be measured and its characteristics determined via survey and the extent to which those components of an organisation’s volume and costs of training susceptible to measurement may be measured.

This chapter also highlights a number of important issues: Firstly, an employer training survey is able to measure (or estimate) an employer’s volume and costs of formal training, but *not* an employer’s volume and costs of informal training. Second, an employee training survey that sub-samples employees from various occupational groups represented in an organisation, can estimate an organisation’s volume of informal and formal training and its costs of informal training, but *not* its costs of formal training. Third, employee training surveys which only sub-sample a smaller and less representative group of employees in an organisation can provide indicative estimates which, for some occupations in an organisation show the average volume of informal and formal training per employee; and the average costs of informal training per employee. Fourth, an employee survey can also provide estimates of the volume and cost of self-paced, computer-based training which, although formal in nature, shares many of the features of informal training and is therefore not suited to measurement via employer survey.

## **Chapter 6**

Chapter 6 examines the extent to which an individual’s volume and costs of training may be measured via household surveys. An individual in this context relates to a person who has attained compulsory school-leaving age and who may be employed, unemployed or not in the labour force. This

chapter also notes the role a training supplement to a non-training household survey could play in measuring an individual's volume of informal training.

### ***Chapter 7***

Chapter 7 presents information necessary to assist in the development of training statistics that meet user needs, the effective use of available resources and existing data sources, efficient decision making on design issues, and establishing the viability of a training collection.

Though some sections of this chapter are generic, it was necessary to address the full range of collection issues, experiences and capabilities involved in developing a training collection. The key step is shown to be clarifying and examining the project's aims and objectives. The discussion of this issue and associated matters are essential to allocating resources and collecting reliable training data that meet the needs of users and society.

Other important issues discussed in this chapter include the investigation and appraisal of the statistical unit, the adoption of an appropriate collection methodology, choice of reference period, scope and coverage, respondent load, availability of records, and the use of retrospective or prospective collection of training data.

### ***Chapter 8***

Chapter 8 outlines the procedures and decisions involved in selecting a data collection method and the field testing of a training collection. The chapter examines issues central to any training data collection, whether via survey, administrative data sources or case studies. It considers such issues as:

- factors influencing the type of collection, such as a census or sample, survey or administrative by-product collection, etc.;
- collection options, such as telephone vs. mail;
- form design issues, such as question types and language use; and
- form testing techniques, such as the use of observational studies, case studies and pilot tests.

### ***Chapter 9***

Chapter 9 investigates the design, co-ordination and management of a training collection. It assumes that practitioners have progressed to the production cycle of a training collection, and emphasizes the collection of training data via survey. The focus of the chapter is upon:

- sample design, sample frames and stratification;
- survey administration;
- data collection and processing; and
- presentation of results.



## **Chapter 10**

Chapter 10 focuses on two broad issues: cross-sectional and longitudinal data collections. This chapter presents the advantages and disadvantages of both collection methodologies with a focus on employer surveys. It discusses some of the more problematic issues in the collection of training data from employers, not raised in Chapters 5 and 6. These include: “nil” trainers; the collection of data from non-employees; employer/employee linked surveys; and other collection methodologies, such as a sub-sample of locations within employer surveys. The chapter has an extensive review of options available under the longitudinal approach. The choice of panel, retrospective collection, record linkage and repeated cross-sectional options are discussed in relation to training surveys.

### **Glossary**

The glossary is intended to assist those engaged in training research via case study, administrative data sources and survey. The definitions should be of value to those researching not only the costs and volume of training, but other aspects of training as well, e.g. commercial training providers, and rates of return to training.

The glossary’s prime focus is on the definition of training terms, though reference is also made to accounting, economic, educational, industrial relations, information technology, legal, managerial, psychological and statistical concepts where relevant to training. The definitions are intended to provide insights into specific concepts, since it is difficult to frame definitions commanding universal acceptance, given cultural differences and variation in the use of terms.

### **Appendices**

There are six appendices. Reference has already been made above to Appendices A, B, C and D. Appendix E discusses issues relating to the comparability of training statistics. These issues include the nature and purpose of comparison; indicators; obstacles to the international comparability of training; and ways in which international comparability could be improved. Appendix F outlines the complex empirical issues posed by the measurement of the costs of on-the-job training (OJT); explains why these issues are *not* capable of resolution in a survey context; and indicates how these issues may be resolved, and the costs of OJT measured, via case studies.

There are some important gaps in the manual. These relate to the collection of data on attitudes to training, training practices and training outcomes.

Data on training practices and attitudes to training may be collected via cross-sectional surveys, as may data on the more immediate effects of training, e.g. the effect of training on the formation of competencies. The longer-term effects of training need, however, to be measured by other means. The appropriate way to measure the effects of training on individuals’ earnings and employment is via longitudinal surveys, while measuring the effects of training on organisations’ productivity and profitability appears to be the domain of case study. Some consideration is given to longitudinal surveys in the chapter entitled “data collection issues”, but it has not been possible to discuss the role of case studies in measuring training outcomes.

Another important gap in the manual is the omission of key issues involved in measuring the training by commercial training providers. They include developing: a register of commercial training

providers; an appropriate survey instrument; and methodologies for maintaining the consistency of the data collection.

In light of these gaps, this first edition of the manual only marks a beginning in the attempt to carry the collection of training data into the 21st century.

## **Conclusion**

Two important points should be added. First, there is a need to propagate the training measures discussed in this manual so as to encourage accounting practice to incorporate more comprehensive and sound measures of human capital formation. The collection and dissemination of data on human capital within enterprises is not commonly accepted within formal accounting procedures, and organisational training records tend at present to be rather fragmentary and *ad hoc*. Improved data sources on individual organisations will offer the best hope of establishing links between training, individual employees and organisational performance. Second, integrated national accounts are needed which provide measures of human capital formation by source throughout the economy.

## NOTES

1. Marginson, S. (1993), *Education and Public Policy in Australia*, Cambridge University Press, Cambridge, p. 56.
2. “Indicators on Human Capital Investment: A Feasibility Study”, internal OECD report, published in OECD (1998), *Human Capital Investment -- An International Comparison*, OECD, Paris.
3. See “Data on Human Capital in OECD Databases and Publications Associated Measurement Problems”, internal OECD report, published in OECD (1998), *Human Capital Investment -- An International Comparison*, OECD, Paris..
4. See Chapter 6.
5. See Ekos Research Associates Ltd. (1996), “Developing Skills in the Canadian Workplace: The Results of the Workplace Training Survey”, unpublished manuscript, Ottawa, Canada, June.
6. For example, different labour markets, industrial relation systems, traditional education and training pathways, institutional settings, natural resources, and cultural patterns, etc.