Chapter 1

Introduction

The introductory chapter to the Guide *provides answers to the following key questions: What is the information society, in statistical terms? Why has the* Guide *been produced? Who is the intended audience for the* Guide*? What does the* Guide *contain?*

There is little doubt that information and communication technology (ICT) has promoted profound economic and social change over the past decade or so. The need for statistics and analysis to support and inform policy-making has grown alongside the rapid emergence of new ways of communicating, processing and storing information.

The *Guide to Measuring the Information Society* documents the work of the OECD and others in developing statistical standards for measuring the information society. While the main focus of the *Guide* is on the work of the OECD's Working Party on Indicators for the Information Society (WPIIS), relevant statistical work in other areas of the OECD, National Statistical Offices (NSOs) and other organisations is also included.

The introductory chapter to the *Guide* provides answers to the following key questions:

- What is the *information society*, in statistical terms?
- Why has the *Guide* been produced?
- Who is the intended audience for the *Guide*?
- What does the *Guide* contain?

The information society, in statistical terms

There is no agreed comprehensive statistical framework of the information society. One possible conceptual model is shown in Figure 1.1 and encompasses the widely agreed elements of ICT supply, ICT demand, ICT infrastructure, ICT products and "content".

A complementary framework is the well-known S-curve (Figure 1.2 below), developed to describe indicators for electronic commerce but often used to describe ICT infrastructure and demand more generally. It considers three stages as follows:

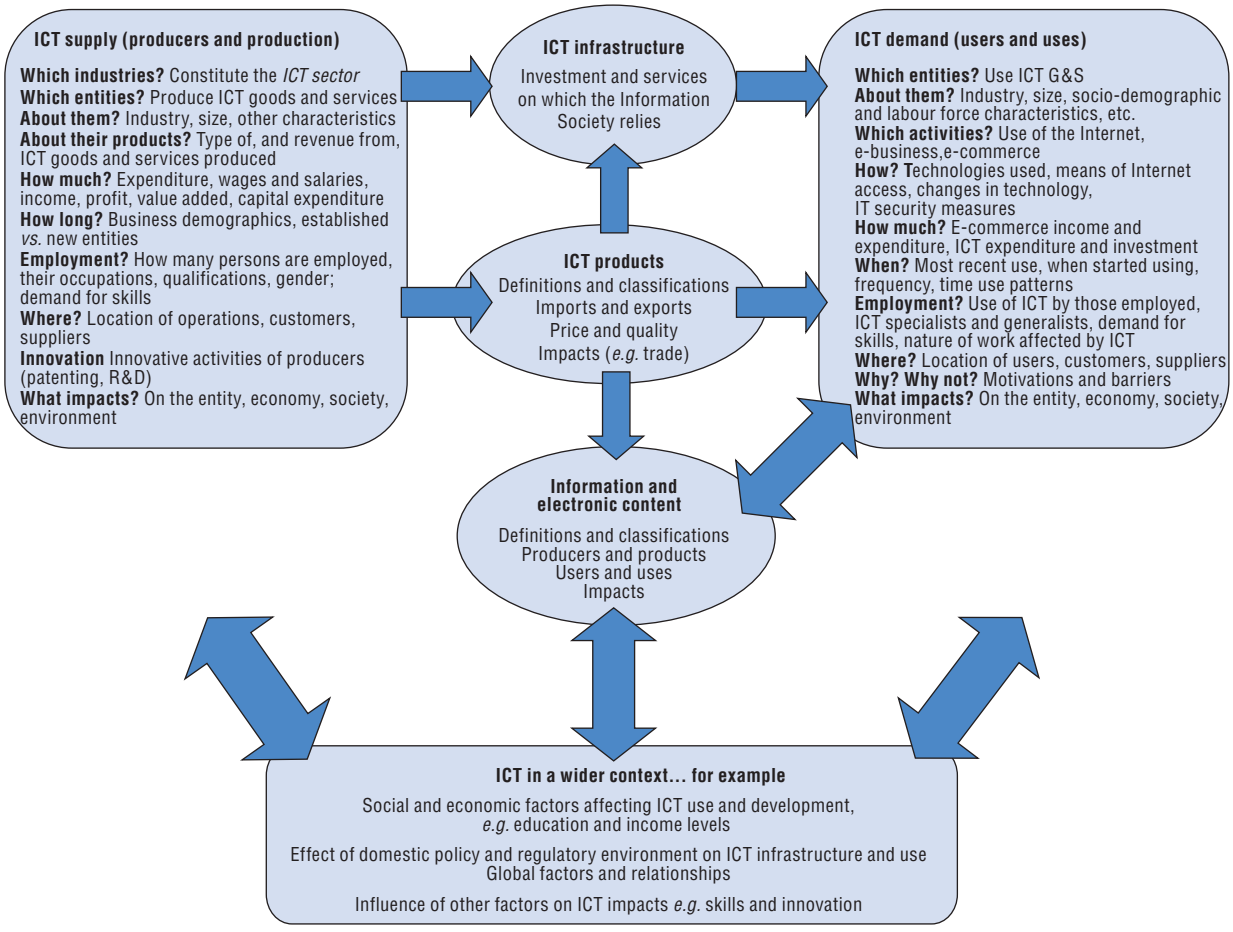
- **E-readiness** – preparing the technical, commercial and social infrastructures necessary to support *e-commerce*. E-readiness indicators allow each country to construct a statistical picture of the state of readiness of the infrastructure necessary to engage in *e-commerce*.
- **E-intensity** – the state of *e-commerce* use, volume, value and nature of the transactions. E-intensity indicators permit countries to profile who is exploiting *e-commerce* possibilities and who is not, and to identify leading sectors and applications.
- **E-impact** – the value added potentially created by *e-commerce*. Statistics are needed to evaluate whether and to what extent *e-commerce* makes a difference in terms of efficiency and/or the creation of new sources of wealth.

The *Guide* and its rationale

The *Guide* is a compilation of concepts, definitions, classifications and methods for information society measurement and analysis.

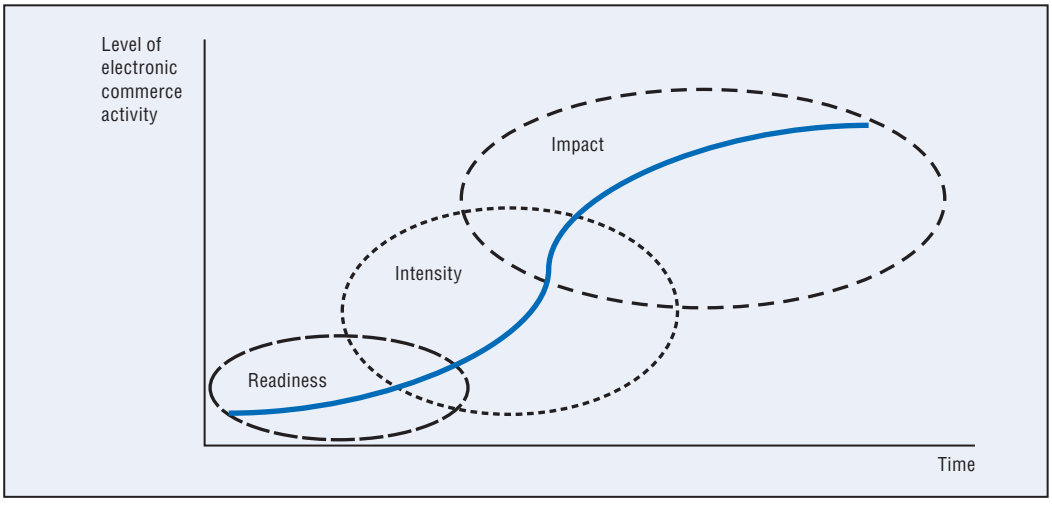
Much of what is contained in the *Guide* comes in the form of recommended guidelines for statistical measurement that, in this context, refers to the production of statistical

Figure 1.1. **Information society statistics conceptual model**



Source : OECD. Directorate for Science, Technology and Industry, Economic Analysis and Statistics Division (DSTI/EAS).

Figure 1.2. **Development of e-commerce markets and measurement priorities: the S-curve**



Source : Industry Canada, presented at the OECD Workshop on Defining and Measuring E-commerce, April 1999.

indicators from mainly official sources such as surveys of businesses and households, and international trade data.

The *Guide* describes areas of work sufficiently advanced in their conceptual and definitional underpinnings, and for which sufficient experiences have been accumulated, to provide guidelines that will enable the collection of internationally comparable statistics. It also includes areas of work that are in early stages of development and therefore represent work-in-progress.

For the benefit of both practitioners and newcomers, the *Guide* includes background information on the policy context and the debates that occurred during the development of OECD standards on information society measurement.

The information society

That we live in a period of unprecedented technological change, both in terms of the extent and speed of change, has been discussed extensively. Many of the underlying transformations are undoubtedly associated with the set of interrelated and, more recently, converging technologies that have come to be known as ICT. They permeate every aspect of life – economic, social, political, cultural and otherwise – and have created great interest regarding their actual and potential impact.

The last two decades, in particular, have witnessed the widespread adoption of a great number of such technologies, notably the personal computer, the cell phone and the Internet. Together with their multitude of applications, ICT touches on nearly every known economic and societal norm. Today, in many OECD and other countries, the majority of businesses use computers and the Internet as a matter of routine. Unheard of until fairly recently, life without e-mail and the World Wide web seems like an anomaly today.

The economic dimension

ICT has had, and will continue to have, significant economic implications. Businesses are transforming their supply and demand chains, as well as their internal organisation to fully exploit ICT. Governments are restructuring their internal functions and the way they deliver services and generally interact with citizens and businesses. People are modifying their consumption and spending patterns, as well as their behaviour. In the process, nearly every economic variable of interest is affected.

ICT has greatly contributed to the process of creative destruction, through the birth of new firms – and industries – and the death of others, with visible impacts on industrial organisational structures and obvious implications for employment. Directly and indirectly, ICT can reduce market friction and transaction costs and affect competitive positioning, with resulting implications for productivity improvement and economic growth.

The social dimension

The nature of ICT is such that its use and impacts extend well beyond the economic domain. This is so because ICTs are general purpose technologies that can be used for a broad range of everyday activities. New modes of individual behaviour have emerged, including new or modified means of personal communication and interaction. The rapid increase in use of Short Message Service (SMS) in some parts of the world represents but one such manifestation of these phenomena. The phenomenon of the so-called *digital*

divide, which arises from uneven access to new technology, is a very important aspect of the social dimension.

Rationale

While new research interests emerge periodically as our societies evolve, they are often definable within rather specific boundaries – an important activity, an industry or a phenomenon. The information society is not so simple. A host of questions, and even controversy, have surrounded it ranging from the economic (both macro and micro), to the social (exclusion, cohesion), the socio-economic (the digital divide), the political (e-democracy), the cultural and beyond.

If decision making on these issues is to be informed, the production of relevant and reliable quantitative information is imperative. For example, without statistics on business use of ICT, the productivity paradox could not be understood; e-commerce could not be placed in proper perspective without measurement of both consumer participation and firm activity; the digital divide cannot be meaningfully addressed without measures of what divides whom and where; national e-strategies aimed at growth and economic development can neither be designed nor evaluated without appropriate indicators.

The need for measurement brings with it the need for statistical standards and, perhaps as importantly, broad access to – and understanding of – those standards. However, the need for statistical standards does not, by itself, provide the impetus for a work such as this. A critical mass of knowledge is also required and, as shall become clear in the chapters to follow, a considerable amount of new knowledge has been generated in a relatively short time.

Significant progress has also been achieved with respect to use of that knowledge by a number of countries. The OECD definition and quantification of e-commerce, for instance, has played a key role in policy developments internationally. The original (1998) definition of the ICT sector replaced several competing and incompatible ones and its 2009 revision, along with revised classifications of its products, are poised to do the same. Finally, the model surveys of ICT use have set standards for such surveys in both OECD and non-member countries.

Expected benefits

It is hoped that the *Guide* will facilitate improved harmonisation of practices in this area of statistics. This, in turn, will enable better international comparability of data, a key requirement for benchmarking, identification of relative strengths and weakness, and tracking progress.

The *Guide* will be useful for countries that already have measurement programmes and those yet to start. Newcomers to the field can expect to progress more quickly than they might have in its absence. They can benefit from work already advanced and be assured that the outputs of their efforts will be as comparable as possible to those of other countries.

It is envisaged that as work continues, the *Guide* will develop and improve in order to better serve the needs of OECD member countries and the international community at large.

Users of the *Guide*

Official statisticians form the heart of the intended audience of this *Guide*. Its content is intended to assist in the consistent application of concepts and definitions, as well as the collection of comparable data via statistical surveys.

There are other users too, of course, and they include:

- Analysts who interpret the statistical information provided by statisticians will benefit by having insights into the standards that underlie that information.
- Policy makers and governments are members of the user community for the proposed *Guide*. They were quick to try to find appropriate responses to developments associated with ICT and form a major part of the demand for information.
- Businesses are also likely users. More than ever, in a period of widespread technological evolution, benchmarking is important as a means of assessing comparative performance and strategy. This is true both at the industry and firm level.
- Researchers in many disciplines are active in this new area too. In particular, those involved in measuring ICT will benefit from the dissemination of statistical standards; and
- Finally, international organisations, whose information requirements centre on comparability across countries, are expected to make good use of this *Guide*.

Scope and content of the *Guide*

The *Guide* broadly covers measurement of the information society as outlined in Figure 1.1. above, but does not attempt to detail all aspects of it. It focuses most attention on the work done by the OECD's WPIIS, including definition of the ICT and Content and media sectors and their products; measurement of ICT use by households/individuals and businesses; as well as work on the definition and measurement of e-commerce. It includes WPIIS work undertaken on e-business measurement, e-government, trust in the online environment and ICT investment. It also covers other selected work on ICT measurement, from within the OECD and elsewhere, including: infrastructure, prices, patents, digital content, the *digital divide*, skills, education, occupations, and impacts of ICT.

It is clear from Figure 1.1. that, while measurement and analysis are applicable to every aspect of the information society, the statistical information and methodologies involved are diverse. In recognition of this, the WPIIS has adopted a pragmatic approach, where priority and statistical feasibility determine the order in which information society issues are examined. Priorities are set in close collaboration with data users – particularly policy makers. Through the same process, components of interest will continue to be added and revised. Future outputs of the WPIIS and others will be incorporated into subsequent revisions of this *Guide*.

Following this introductory chapter, the contents of the *Guide* are organised as follows:

- **Chapter 2** – ICT products – describes definitions and classifications relating to ICT goods and services, measurement of international trade in ICT goods, and the price and quality of ICT products.
- **Chapter 3** – ICT infrastructure – addresses the infrastructure of the information society – access services, their quality, investment in such services, and tariffs.
- **Chapter 4** – ICT supply – deals with the supply side of ICT, namely the ICT sector, its impacts, other ICT-producing entities, and ICT patenting activity.

- **Chapter 5** – ICT demand by businesses – describes the OECD model survey of ICT use by businesses and includes definitions and discussion of statistical standards for e-business and e-commerce. It also looks at the topics of ICT investment and expenditure by business, and the economic impacts of ICT investment and use.
- **Chapter 6** – ICT demand by households and individuals – describes the OECD model survey of ICT access and use by households and individuals. It also includes discussion of e-commerce and the social and economic impacts of ICT use by households and individuals.
- **Chapter 7** – Content – describes statistical issues relating to information and electronic content and more recent work on defining a Content and media sector and its products.
- **Chapter 8** – The road ahead – concludes with an examination of the international scene and future challenges.

Output: Publication of information society statistics

In parallel with development of standards for measuring the information society, the OECD has been publishing comparable statistics based on those standards. Many, but not all of those statistics, have been based on standards developed by the WPIIS. Others have included ICT infrastructure, ICT skills and ICT patent statistics. The following paragraph briefly describes the more important OECD published outputs on the information society.

The regular OECD publications containing information society statistics are the *Communications Outlook* (*www.oecd.org/sti/telecom/outlook*), the *Information Technology Outlook* (*www.oecd.org/sti/ito* to be replaced by the *Internet Economy Outlook* as of 2012), and the *Science, Technology and Industry Scoreboard* (*www.oecd.org/sti/scoreboard*). They are usually published biennially, and each series began in the early to mid-1990s.

At the end of 2004, OECD introduced *Key ICT Indicators,* an online compilation of selected ICT indicators. Data are updated on a rolling basis and can be found at *www.oecd.org/sti/ICTindicators*.