UNITED NATIONS

E

ECONOMIC AND SOCIAL COUNCIL

Distr.
LIMITED
E/ESCWA/STAT/2001/IG.1/11
28 March 2001
ENGLISH
ORIGINAL: ARABIC

Economic and Social Commission for Western Asia
Statistical Committee
Fourth session
Beirut, 3-5 April 2001

Item 12 of the provisional agenda

THE USE OF INFORMATION TECHNOLOGY IN SUPPORT OF STATISTICAL WORK AND THE ACTIVITIES OF THE ESCWA STATISTICS DIVISION

INTRODUCTION

1. In the final decades of the last century, information technology made huge strides forward which have had widespread repercussions in various fields, including statistical work and the activities of statistical units around the world. Four of the most significant of these developments emerge as described below:

(a) The advance of technology and the development of personal computers has increased the use of such computers and made possible linkage through local area networks (LAW) and wide area networks (WAN). These have become increasingly important in recent years because they make it possible to link up to servers in order to create an integrated network system with huge potential, exceeding even that provided by main frames in previous years. These personal computer networks, which operate within what could be termed client/server systems, make it possible for a large number of people to use the system at the same time, regardless of their location, and allows them all to use the available databases for processing through special software applications;

(b) The great advances in information technology, in terms of both the basic structure of networks and the methods used, has made it possible to move large amounts of information and statistics between computer networks in record time and at reasonable cost. In addition to the part played by this technology in strengthening States' ability to make effective, intensive, and reasonably priced use, through the Internet, of developments in the outside world, internal networks (intranets) have paved the way for the direct and prompt exchange of information within statistical units;

(c) Increased functional capacities and the development of software applications and work programmes to make them more responsive to the needs of users, while at the same time expanding their range and making them more user-friendly, has made it possible for large numbers of experts in different fields to use this software without having specialized computer expertise;

(d) The continuous reduction in both the size and price of computers on a wide scale and their hardware and software and their increased technical capacities have prompted their increased use not only by Government departments, companies and organizations, but also by individuals.

2. Generally, these developments confirm the trend of information technology towards the adoption of shared systems for the management of object-oriented modern databaseswithin a networking system and a basic client/server structure. At the same time, work should be done in order to ensure that the design is open and has the potential for growth in the future, while maintaining linkage between the various components.

3. These fast-moving developments within the field of information technology have had an impact on various statistical operations, the activities of national statistical units and international organizations. The impact of these changes has also been felt in all operations related to the production, treatment, processing, publishing and distribution of data, which, in turn, will have long-term effects on the organizational structures and methodology of national statistical units.

I. INFORMATION TECHNOLOGY AND NATIONAL STATISTICS UNITS

4. The main function of statistical units is to provide statistical services which meet declared needs. The statistics provided must be objective and of a high quality in order to help and encourage Government agencies and society in general to adopt decisions, conduct research and hold discussions based on the information provided.

5. Advances in information technology empower national units to carry out their basic functions. However, from a strategic viewpoint, the nature and scope of this task require the re-examination of statistical issues in terms of quality, level of detail and the appropriate time for publication. At the same time, the scope of the target groups for these issues has expanded to include the private sector or civil society and the public at large, in addition to Government departments and research centres which, in the past, represented the main user sectors.

6. In this context, national statistical units must carefully pursue the rapid developments in information technology in order to benefit from their various positive impacts on statistical work. These may be identified as follows:

(a) The collection of data and the ways in which national statistical units deal with data providers. While most of these operations are still paper-based, there is a strong potential for technological development in this field, including reading the paper-based data, comparisons with personal computers, and all related changes in the design of the tools used for the collection and analysis of data;

(b) The use of software applications programmes to check, review and correct data and fill gaps according to specific rules, in addition to processing and coding. This will lead to higher standards and a wider range of topics covered by data bases;

(c) The application of data warehousing and data mining, which is based on the linkage of data bases, opens the way for the creation of integrated information systems and the ability to select the required information based on common variables. This approach provides the opportunity for the study of more complex subjects through the linking of data in order to secure the appropriate information;

(d) National statistical units will have the opportunity to contact data users through numerous channels, including during the data-collection stage or during the distribution of results and statistical bulletins. In this context, electronic publishing has become the most suitable method for the direct and prompt distribution of data, be it through the use of CD-ROMs or Internet networks. Users may examine and review the information they need and use data directly in more in-depth processing through specialized programmes;

(e) This changes the nature of the organizational structures of national statistical units and the way they are administered. Quality control is improved, as is the determination of the quality of the human resources needed in order to work and build technical capacities through planned training programmes.

7. The use by statistical units of communications technology should increase knowledge, involvement in decision-making and the vertical and horizontal flow of data, thereby strengthening the effectiveness of such units. However, at the same time, the nature of the internal relationships in and the organizational structure of these organizations will also change.

8. It is expected that in future, as supervision and control increase, along with support for networking, coordination mechanisms and participation in the exercise of authority and decision-making, the organizational structure will become vertical or flat.

9. The organizational structure of the statistical units may also become a matrix rather than functional, being made up of a group of experts in various aspects of a certain subject and including an information technology specialist.

10. At the same time, the human resources required for working in these conditions will need special abilities and specific expertise appropriate to the nature of the complex tasks that they will have to perform. It is clear that the training courses that will have to be conducted in this field will need to build both statistical and information technology capabilities and convince statisticians that their role goes beyond the mere collection of data.

11. When national statistical units are responsible for monitoring and preparing for technological developments and their impact on statistical work, using a set of plans of varying lengths, those developments will be more widely used in the support of statistical operations and improvement of data quality and, as a result, in support of the decision-making process and of planning in various fields. The following are essential to the success of these plans:

(a) The availability of the resources necessary to introduce and support the use of information technology in statistical units. This might require specific measures to be taken in order to mobilize the support of decision-makers at the various levels. Such measures are likely to be a problem for many developing countries, particularly when the national statistical unit suffers from lack of resources;

(b) The staff necessary to do the work must be trained, and training courses must attempt to strike a balance between developing statistical capabilities and familiarity with information technology, and

(c) Society in general must be prepared for the developments in this field and for the gradual change in the quality and nature of statistical publications.

II. THE USE OF INFORMATION TECHNOLOGY IN THE ESCWA STATISTICS DIVISION

12. The subsidiary programme for the preparation, coordination and harmonization of statistics is intended to assist in the development of national statistical systems and ensure their consistency at the regional level, in order to respond effectively to the demands of planning, policy formulation and decision-making and respect developing economic and social priorities. It will achieve this by providing statistical data users in the ESCWA region and other technical divisions within the Commission with a variety of publications.

13. This task requires that various data in all the statistical fields covered by the Division's programme of work must be collected, classified and published, using modern means and methodologies that permit such publication to be carried out with the requisite speed and accuracy. In this context the importance of the link between statistical work and the use of information technology becomes clear.

14. Notwithstanding the complete conviction of the need to develop the statistical work within the Statistics Division in a manner that will make use of the positive effects of the rapid developments in information technology, in the past a number of factors have helped to delay progress in this field. The most important of these include the following:

(a) The location of ESCWA headquarters has been changed several times. As a result, the staff, including research assistants, has kept changing and the Commission's internal information policy has been inconsistent;

(b) It has been difficult to provide the financial resources necessary to realize rapid growth in the use of information technology in the Commission. As a result, the recommendations of the technical reports prepared by the specialized institutions in Amman (when the Commission was located there) and Beirut have

not been implemented. Those institutions put forward specific suggestions on the building of a system for statistical data, taking into account the needs of the Statistics Division and of those who are expected to use the system in the ESCWA region, especially the national statistical units;

(c) The differences and discrepancies in the level of use of information technology in the national statistical units of ESCWA member States and the consequent differences in approach to collecting and publishing data.

15. Study of the current situation shows that information technology is being used in the work of the Statistics Division at three levels, which are linked by the nature of the development of the technology and the work of the Commission in general. Those three levels may be described as follows:

(a) The use of Excel spread sheets to prepare traditional statistical tables. These are easy to use and amend, notwithstanding a number of problems, including the difficulty of working on them communally, problems with maintaining a prolonged time series or the integrity of data, the impossibility of carrying out an electronic search of the sheets and the difficulty of ensuring that data in the various sheets is consistent. One of the most outstanding uses of Excel is in the preparation of population, education and health statistics, national accounts, and statistics relating to finance, prices, energy, foreign trade and industry;

(b) The establishment of distributable database applications. The form and content of these databases is decided on the basis of the expected needs of users and decision-makers. They can be used without a connection to the Internet, supplementary sheets can be constructed, the time period requested for the data can be specified and electronic searches can be carried out. This system, which is analogous to that used by the Statistics Division in New York, has the advantage of permitting data to be connected to metadata, thereby avoiding duplication and ensuring the accuracy of data. Furthermore, electronic developments help to alleviate specific problems related to opportunities for users to obtain updated data and for multiple applications, through connections to the Internet and the setting of specific time-frames for the updating and distribution of data. One of the most important examples of such practice in the work of the Statistics Division is the database on labour force and social statistics and the common country assessment;

(c) Access to the United Nations Economic and Social Information System (UNESIS). This system, which is currently being prepared by the Statistics Division in New York, has achieved many of the goals to which the ESCWA Statistics Division aspires. It has therefore been agreed that ESCWA may have access to the system and adapt it to suit its work requirements. In this framework, an experimental programme, the national accounts module, has been installed and is being used, and the necessary staff have been trained in its use. A study is currently being carried out on ways of using the United Nations Common Database, presently available on the Internet. This database includes a statistical time series on many financial and social matters gathered from a variety of national, regional and international sources. The database permits users to extract data in many different electronic forms, thereby making it possible to use and manipulate such data in many specialized statistical programmes.

16. While cooperation in this field has been very successful, it should be noted that the requirements of the ESCWA Statistics Division differ in some respects from what was applicable when the subsidiary system was designed. Such differences relate to the regional particularities of the statistics, the comprehensiveness of the subjects being dealt with and the type of results required (the statistical publications), all of which may require specific adaptations in the construction of the ESCWA Statistical Information System (ESIS). Meanwhile, the Statistics Division homepage on the ESCWA website continues to be supported and updated.

III. FUTURE ORIENTATION

17. The various levels referred to above have made it possible to use information technology in order to meet the interim needs of the Statistics Division, allow it to achieve its goals and publish the statistical materials agreed upon in forms appropriate to the type of technology used. In view of the obvious trend towards an increase in the need for statistics and in the variety and multiple applications of statistics, and the need to have direct access to updated data as quickly as possible, it has become essential for the Statistics