



Economic and Social Council

Distr.
GENERAL

CES/AC.71/1999/7
1 December 1998

ENGLISH ONLY

STATISTICAL COMMISSION and ECONOMIC COMMISSION FOR EUROPE

CONFERENCE OF EUROPEAN STATISTICIANS

Meeting on the Management of Statistical Information Technology
(Geneva, Switzerland, 15-17 February 1999)

Topic (i): The impact of Internet on the statistical production and dissemination process

THE IMPACT OF THE INTERNET ON THE PRODUCTION AND DISSEMINATION OF STATISTICS

Submitted by Statistics Finland¹

I. CHANGES IN THE OPERATIONAL ENVIRONMENT

1. The information market is undergoing an extensive global change. The technological threshold for the distribution of mass amounts of information has lowered. Central statistical agencies the world over are amidst a general trend where statistical agencies which were originally intended to serve primarily public administration are opening up to citizens and other customers.

2. Attitudes towards chargeable services are changing. In several countries it has become necessary to introduce service charges to finance growth in service activities. Chargeability and effectiveness have come to be considered as partners. Nowadays, managements of statistical agencies are starting to focus more and more on such issues as transparency and customer orientation.

3. The development of information technology and data networks facilitates the introduction of a digital production model. The production process, from

¹ Prepared by Timo Relander and Risto Kunnas.

data collection to delivering a completed product to a user's home computer, can be implemented completely electronically, with lower costs and faster than ever before.

4. Separate electronic data processing and desktop publishing functions are disappearing from our field, to be replaced by information technology and information society and its superhighways.

5. The introduction of the digital production model also forces us to reconsider our organizational models. Independent statistical responsibility units will have to be given up, at least in the early stages of the change, in favour of process organization.

6. The explosion in the use of the Internet has happened because it is a public network. The large number of net customers has, in turn, created an interesting and profitable market, which boosts product development. Today, the Internet is on the heavy upswing.

7. Being an electronic network, the Internet eliminates distances and facilitates round-the-clock opening hours. The Internet can generate monthly customer numbers that far exceed the total number of customers in the history of statistical agencies to date.

8. Extensive electronic information service, in which customer orientation and openness are combined, can only be achieved by developing an effective self-service model, supported on screen by sound, image and a common document. The model approaches the conventional model of a personal contact.

9. For the managements of statistical agencies, the Internet is going to be the headache of the early 21st century, which cannot be cured simply by "sleeping it off".

II. THE STARTING POINT OF SERVICE

10. The growth in the amount of information available from the network has made advances in the technology of search engines necessary. Coping with simple word searches is no longer sufficient - today, these engines can also convey data processing programs. Their ability to manage various databases is also improving all the time. To some extent, this development could be described as an information specialist who has been packed into a search robot and sent on an expedition into files armed with an assignment, calculator and graphics. Self-service and guidance are fast developing into the cornerstones of the services.

11. To be able to move in such a world, also known as information society, activities must be organized so that information about the data and services is available, the primary presentation mode of the results is digital, and electronic networks are used as the channels for communication, services and products.

12. The Internet makes it possible to transform transparency and self-service into our key trends:

- More information,
- Independent data search, and
- Data processing services.

III. CUSTOMER PROFILES AND USAGES DETERMINE PRODUCTION MODELS

13. Up to now, central statistical agencies have been institutes serving a narrow range of customers and their data processing has been characterized by fixed and closed systems. Development has generally meant acquiring new, technically more efficient tools.

14. At first, information technology brought about a new division of responsibilities and led to compartmentalization. Later on it was used, much in the same way as robots, to combine various work stages and save work input. The operating principle was to document systems for the benefit of internal users of the systems, in other words, for data producers. Little or no consideration was given to the needs of data users.

15. In many central statistical agencies, as at Statistics Finland, the service model still consists of standard or "off-the-shelf"-services for a narrow range of customers. The main problems of this service model are :

- system-specific solutions;
- laborious data transfers from one system to another;
- production of half-completed products requiring manual finishing;
- several parallel vintages of ADP-technology;
- development is hardware-dependent and system-specific.

16. Mentally, we have grown to accept strict areas of responsibility by statistical themes and to believe that only experts of themes can do a proper service. When, at the same time, the demands of statistical information have changed towards a more comprehensive set of data, our service model is no longer sufficient for the service expected by clients.

17. The expanding range of customers and the remodelling of the old public administration structures with new information needs puts pressure on statistical agencies to change.

18. Standardized methods of operating will be replaced by flexibility. Separate publications will be replaced by shared common statistics, which will expand the range of description of statistical data. Paper printouts will be replaced by further processing digital facilities, with which customers can easily process statistical data for their own purposes. At the customer level, product-specific software clients will be replaced by selection, search and processing services implemented with the browser technology. The Internet will open, or has, in fact, already opened doors to the sources of information.

IV. FROM DATA INTO INFORMATION

19. Collected data is no longer isolated, but genuinely versatile. The ability to manage various types of data has become the main foundation of efficient services. Each item of data has to be identifiable from a database through its metadata.

20. Since, for example, large airline companies or car manufacturers are able to manage their work instructions, locations of spare parts and quality certificates by model and version over a time period of up to twenty years, it should not be that difficult for statistical agencies to manage databanks. It has simply not been necessary up to now.

21. Management is necessary in the information society because customer-specific information needs and data use situations vary, and the volume of unexpected data needs is growing. It should be possible to look first for answers to new questions from the existing mass of data before starting new data collections.

22. The only way to cope with this is to develop information services which operate increasingly on the principle of self-service. Besides the storage of results, there must also be extensive self-service systems which contain selection and calculation facilities from the basic data.

23. As a matter of fact, the possible service models contain a paradox with regard to development. If, for one reason or another in the selected operational model, self-service is restricted to searching for completed products or parts of them, the above-mentioned databank management or self-service system is unnecessary from the customer's viewpoint. A restricted model can, nevertheless, result in extensive service activities which, for the user's own needs, necessitate databank management and an efficient data collection and computation environment.

24. The number of printout variations will be considerably higher than at present. From the point of view of efficiency, it will be more economic to store some basic printouts and provide the users with selection and printing facilities with which they can rationally manage their own task definitions as a self-service. Both the selection and printing definitions can be stored and defined to be automatically repeated whenever new material is published. "Programming", which is part of the definition of the required result, is often more expensive to the user than the processing of the result or the storing of the completed product. However, if all the printout variations were to be made at statistical agencies, we would soon find ourselves in a situation where all our human resources would be in the process of "programming" various printouts, or the development already begun would have to be totally stopped by pricing it heavily, or we could start handing out queue numbers and extending delivery times.

25. In other words, self-service systems of various levels are required on the Internet, and these will also alter the division of responsibilities

between the users and producers of statistics. The Internet gives just this opportunity to statistical agencies: it makes it possible to serve a continuously growing range of customers and respond to the customers' changing information service needs.

26. Information about data, products and services is an integral part of customer services. As statistical agencies open up and self-service increases, we are facing a considerable effort in the writing of the required metadata. The better our statistical metadata are, the smaller our needs for different types of data interpreters will be.

V. ALTERNATIVE SERVICES

27. The different types of services are illustrated in the following table:

	Physical mode	Digital mode
Service	Paper printouts	CDs , diskettes, on-line shop
Self-service off-the-shelf self- selection		standard table database text databases statistical graphics databases material databases

Today we are, on the whole, at the intersection of "service" and "physical mode".

28. In their use of the Internet, leading statistical agencies have stepped into the square outlined by "digital mode" and "self-service", but in such a way that the products are electronic facsimiles of the physical products and the databases consist of standard tables. The tools necessary for self-service, such as metadata, search engines and the Internet as a data transfer medium, are available. This change alone has made it possible to multiply the service capacity.

29. Moving to production databases makes tailored self-service possible. This service can also be extended by providing customers with different tools for processing the material, such as spreadsheet, graphics, word processing or other such facilities in cases where the customer has no access to the corresponding tools.

30. Databases can also be text databases in addition to numerical databases. In this kind of service, the customer is offered analysis or know-how services along with the statistical tables on which they are based. This model also contains a facility for the customer to compile tailored reports, for example, for in-house use in a company for distribution on the company's own Intranet.

Attitudes towards transparency and customer services will be the central criterion in the selection of the preferred service model.

31. If the selected operational model is that of limited services primarily to the public sector, the Internet will be only one of many handy electronic media. User-friendly metadata and statistical data need not be built if this model is selected. If, however, the selected model is that of openness and wide-ranging customer services, the Internet is "a must".

32. Self-service, metadata, text and information databases with processing power, interactive information services and automatic customer management tools are the tools for a statistical agency that selects the latter alternative.

33. When necessary, service charges have to be introduced to fund these services, in particular the tailored services. It should also be borne in mind that activity always tends to improve when charges are introduced. They signify better attention to customer needs, elevation of the level of services and they act as indicators of demand and pointers for the further development of services.

VI. THE FINNISH CASE

34. According to the latest customer satisfaction survey carried out for Statistics Finland, the majority of customers want to deal with Statistics Finland via the Internet. Two out of three of all customer groups already use the Internet in their daily work. One third of our customers reckon that they could satisfy 80 to 100 per cent of their communication needs with Statistics Finland via the Internet if the agency would exploit it fully. So, although we have had the database service since the early 1980s, our customers are still not satisfied today.

35. The system is out of date, expensive, very slow to reflect new demands, is not an integrated part of our production lines and is not in the Internet. This, of course, is a slightly exaggerated view, but is, however, mainly true.

36. After a few months of intensive search and tests, we selected the StatLine system of Statistics Netherlands to serve as the statistical databank and Internet data service system. StatLine has been specially developed for the needs of a national statistical office. In general, the customers' needs vary a great deal. Some of them want general information, while others need detailed data in digital, processable form. There is no universal solution for satisfying the customers' needs.

37. In Finland we foresee that the information industry will be based on the digital world. Statistics are a part of this world, mainly used as a semi-finished product for various purposes. The Internet will be the highway to the datapools and the browsers with metadata will serve as the data guides. On our homepage a customer can select between News, "Top ten" figures, Links to other

statistical agencies, Data services like the StatLine system of Statistics Netherlands, Data guide service, Data shop and Debate pages.

38. We offer both free and chargeable goods services. The borderline between these two types of goods and services is not easy to lay out. It depends on the statistical agencies' administrative culture and financial situation. In Finland, "Press releases" and "Top ten" or "Top hundred" types of services will be free of charge. If a special service is ordered by a customer or a group of customers it is usually chargeable. Changes in production costs may also carry a service over the borderline. A publication is a good example. In paper form, it has a price but in electric form, it is free of charge. However, in the Finnish case, the main trend is unquestionably in the "free of charge" direction.

VII. SUMMA SUMMARUM

39. The standard supply of statistical data is being replaced by tailored services and electronic transmission of data in a comprehensible form. Making statistical data understandable is a challenging task for statistical agencies. It requires networking with experts in different fields and observing the environment through the customer's eyes.

40. Information about which new statistics are needed and which present ones could be discontinued is of vital importance. Therefore, continuing market surveys should be included in the annual programmes of all statistical agencies.

41. An alternative to evolution is revolution, to which statistical agencies, too, have been subjected in some parts of the world. The sketched scenario may give some indication about the real magnitude of the change the field of statistics faces today. Managing and directing the process of change so that mental barriers can be overcome without breaking them will be one of the challenges facing the managements of statistical agencies at the onset of the 21st century.

42. For an organization to be able to consolidate its forces in order to realise a certain vision, it must first come to a common agreement about the target it wants to achieve and understand the reasons why this future target is worth achieving. These are the matters we are currently contemplating and putting into practice at Statistics Finland. This occasion has, in part, given us more material to build on.