IAOS Satellite Meeting on Statistics for
the Information Society
August 30 and 31, 2001, Tokyo, Japan

ICT as a Means for Improvement of Understanding and Dissemination of Official Statistics

Bregar, Lea
University of Ljubljana, Faculty of Economics, Slovenia

Abstract

Recent fascinating development of information and telecommunications technology has made vast amounts of data available to many millions throughout the world. Official statistics represents important segment of these data. Widespread and increased use of conceptually and methodologically complex official statistics require appropriate training of users. The paper deals with the issue how the modern information and communication technology (ICT) could increase the quality and efficiency of users' training and dissemination in official economic statistics.
Comparative analysis of using ICT and traditional media in training process is based on the findings of external, internal and students' evaluations of development and pilot implementation of the course on official economic statistics This course entitled Course on European Economic Statistics – CEES was developed by international consortia with Faculty of Economics, University of Ljubljana, as a leading partner. Course is available as a print, CD-ROM and web-based version with the demo home page http://www.ef.uni-lj.si/projekti/cees/.
Key words: official statistics, economic statistics, ICT, web-based course, evaluation.

1 Introduction

Users' opportunity to exploit and manipulate available statistical data is nowadays greater than ever before, but awareness of their exploratory power and limits and consequently their proper and skillful use are far from being adequate to technological possibilities. The initiative for the development of a modern course on official statistics had risen from the deficiency of such a course, which would meet the needs of the well-defined target groups of users in terms of its contents, level and flexibility on the one and exploit the tremendous possibilities of the modern information technology on the other hand.

In the period of January 1998 to June 1999 course on European Economic Statistics (hereinafter: CEES) was developed.[1] CEES is available in three languages (English, Slovene and Bulgarian) and on different media (in print, on-line and off-line CD-ROM, web-based version). The course was originally conceived as an university degree course. Nevertheless, the course can be delivered in different formats to different users' groups thanks to its flexibility in terms of the media used, modularised structure of contents and different types of study support embedded (Bregar, 2000).

[1]CEES was developed at Faculty of Economics in Ljubljana/Slovenia with the help of a consortium of partners: Faculty of Electrical Engineering, Ljubljana/Slovenia, Faculty of Economics and Business Administration, Sofia/Bulgaria and the Training of European Statisticians (TES) Institute from Luxembourg. The project was financed by the Phare Programme for Multi-Country Co-operation in Distance Education, Course Module Development Project CEES, Contract No. ETF/97/VET/0068.

This paper evaluates comparative strengths and weaknesses of various media used in training process as proven in the case of CEES. The evaluation summarises the findings of external evaluation (Freeman, 1999) and students' evaluation (Bavdaž, 1999) as well as the results of the formative self-evaluation conducted by the CEES course developers at various stages of the project (Bregar, 2000).
Methodologically, the evaluation is based on the qualitative analysis of satisfying the criteria, which distinguish efficient open and distance learning (ODL) programmes. These criteria are: access to information resources; availability of study tools; interactivity; study support; flexibility of training delivery.

2 Access to Information Resources

From the users' viewpoint, the most important criterion is access to information resources, which are relevant to their needs.

Printed information are most easily accessible, while no technical facilities are needed. But, not to mention the problem of continuous updating of printed materials, information about additional interesting resources are rather limited.

In order to use ***CD-ROM based materials*** users need a personal computer and a CD-ROM drive which in themselves can be regarded as constraints to their wider use. The problem of continuous updating isn't as serious as in case of printed study materials, especially if users have internet access at their disposal.

The most prominent problem of using both CD-ROM and web-based materials' is users' inability to judge in advance the amount of information contained. Therefore, good navigational tools, supplemented by trainers' synchronous or asynchronous assistance are of utmost importance for this type of media.

3 Availability of Tools

A decisive prerequisite for efficient training and dissemination of official statistics by means of ICT is availability of tools such as statistical software packages, glossary, search engine, notes editor etc. From this viewpoint, ***printed study materials*** are rather poor. They impose a traditional training style, reducing users to passive recipients of information.

Web-based learning materials, on the other hand, facilitate active training and dissemination of official statistics. A large selection of tools is included into standard software packages. In case of CEES, these tools are enriched by additional study tools of the users' interface that enable them to search for additional information, link and compare topics, analyse and interpret results and thus actively build and expand their knowledge using official statistics. Exploration of external links to on-line statistical databases and catalogues adds the distinctive comparative edge to this type of training materials.

However, when searching for the relevant external links during the CEES development, the authors were constantly facing a large degree of heterogeneity of the statistical data providers' webpages. This heterogeneity has many facets ranging from the graphical appeal to costs of database access (Bavdaž, Ograjenšek, Bregar, 1999). In our view, it is one of the reasons that hamper an implementation of the on-line statistical data and methodological recommendations in the academic sphere (be it for research or in the classroom).

4 Interactivity

Printed study materials facilitate a limited, intrinsic interaction, which depends on authors' abiding to the *self-study rules and principles* when developing study materials.

Interaction plays a more prominent role in ***CD-ROM based and on-line study materials***. In CEES each html page may contain *several types of links:* explanations and cases within an html page (in the so-called "pop-up" windows); internal links (links to pages within the course) and external links (links to other web-sites).

Additional tools, which increase interaction of both CD-ROM and web-based materials, are *search engines* and *self- assessment questions* as well as *glossary* and *notes editor.*

5 Training Support

When using printed materials ***trainers' support*** is usually given separately, in various forms of *tutorials and other forms of traditional face-to-face training.*

CEES on CD-ROM with active external links additionally facilitates the use of pre-addressed *e-mail windows* and *discussion groups*. Both options are also available in the web-based version as well as *electronic notice board* and *video-communications*. CEES students especially crave synchronous (immediate) forms of communication, which lessen their burden of isolation, frustration and loneliness as they present the opportunity for gaining explanations and answers to specific questions. Unfortunately, there are some constraints that shouldn't be overlooked such as slow and unstable modem connections, unreliable servers (especially during the night or weekends).

More intensive use of ICT requires intensification of ***technical support***, usually provided by the *Help* and *FAQ* options already built in the system.

Last but not least, the web-based course offers possibility to integrate ***administrative tasks*** much easier: while training staff enjoys the automation of administrative procedures, learners could gain on-line access to administrative office and much more.

6 Flexibility of Training Delivery

Flexibility of training depends on four factors: *time*, *place*, *study pace* and *contents*.

From the viewpoint of ***time*** all three media are equally flexible. Prepared for self-study they can be used whenever that suits the learner.

The highest level of flexibility from the viewpoint of ***place*** is achieved when printed materials are used. Flexibility decreases with the use of CD-ROM and web-based versions for a PC, a CD-ROM drive and/or a modem are necessary prerequisites to use them. These disadvantages are at present ever so slightly moderated by increasing numbers of portable computers and mobile phones.

From the viewpoint of ***study pace*** all three media are more or less equally flexible and do not determine the study pace in advance. It is far more determined by the formal training requirements.

As proven by CEES, the ***contents*** on the web is by far the most flexible. It is fairly easy to adapt it to the different users' groups that can use various study paths through common training materials. Both CD-ROM and printed version are inflexible in this respect.

7 Conclusion

The comparative analysis points out the distinct superiority of the web-based materials when compared to other options. Its comparative advantages are enhanced access to information resources, availability of various tools and increased level of interactivity, which are basic prerequisites for active training and efficient dissemination of official statistics. Although the advantages in training support on the one hand and time, place and study pace flexibility on the other must not be neglected, the genuine benefit of web-based training is thus the opportunity for introducing active training and dissemination approach in official statistics.

References

Bavdaž, M.: Analysis of Students Questionnaires. Ljubljana: Faculty of Economics, University of Ljubljana, 1999, p.38.

Bavdaž, M., Ograjenšek, I.; Bregar, L.: Webpages of Selected Statistical Data Providers: Comparative analysis (in Slovene language). Proceedings of International Conference on Statistics: Electronic Commerce and Statistics. Statistical Office of the Republic of Slovenia, Statistical Society of Slovenia, 1999, pages 253-269.

Bregar, L., Ograjenšek, I., Bavdaž, M.: Teaching Economic Statistics in a Digital Environment. Proceedings of International Conference on Methodology and Statistics. Anuška Ferligoj (ed.): New Approaches in Methodology and Statistics. Metodološki zvezki 16. Ljubljana: FDV, 2000. Ljubljana: Center for Methodology and Informatics, Institute of Social Sciences at the Faculty of Social Sciences, University of Ljubljana, 2000, pages 237 –249.

Freeman, R.: Course Evaluation Certificate for CEES. Evaluation Report on Course on European Economic Statistics. University of Sunderland, 1999, p.2.