

Developing performance measurement and quality evaluation in Estonian research libraries: Survey of current situation

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Abstract

The importance of economy, efficiency and effectiveness of library performance set us new goals in the library management and decision-making processes. Performance measurement and quality appraisal are important and useful for libraries of every type. Library performance evaluation is a political process, because it includes allocation of resources. Effectiveness, efficiency and economics have to be considered in library strategic planning, especially financial and policy planning.

Over the years there have been several studies on performance measurement, mostly involving academic libraries. This paper gives an overview of some recent surveys and of the Estonian Science Foundation's project *Performance Measurement and Evaluation of Research Libraries in Estonia*. Finance for scientific research is allocated in the form of grants from the Estonian Science Foundation.

The paper also describes the study *Library Performance and evaluation: possibilities for extending performance measurement in Estonian research libraries in 1995-2000*, dealing with performance measurement and standardisation in Estonia.

Introduction

CONCEPTS AND THEORETICAL BACKGROUND

We are living in a changing environment. Organisational change involves large areas of activity including mission statements and goals, the role of the library in the information society, structure of the organisation, use of information technology, culture of the organisation, qualification of librarians and finance.

Performance measurement in libraries supports the management process and involves evaluation. The need for better management information and decision support techniques within libraries has long been recognised and librarians require information relating to the provision of information services to help them understand the success of individual operations as well as their impact on the organisational environment and its development (Cullen, 1998).

Because every library has specific objectives, goals and responsibilities there is need to develop specific performance indicators for every library type, to adequately reflect their performance quality, quantity and effectiveness.

Performance evaluation is a political process, because it includes allocation of resources. Allocation of resources requires judgement about what is important and setting priorities for spending financial resources (Van House, 1995).

Library development and effectiveness depend on public support, national economic, cultural and information policies, valid legislation and adequate finance. The status of a library in the state information system can be enhanced by its skill in evaluating its activities, measuring its performance and effective use of benchmarking. Effective library networks are firmly rooted in meeting users needs. That means, in planning library activities and developing library and information policies the following concepts have to be considered – effectiveness, efficiency and economics (Ramsdale, 1997).

These concepts have become the basic concepts of organisational development in time of change. It is important to analyse the integration of library services and goals into a social development framework while planning the library's activities and to assess performance within a framework of feasible targets (Nuut, 1999a).

Library performance measurement and assessment are a part of the library management process, and information necessary for measurement (for instance, library statistics) is management information. The results of the evaluation process should form the basis of library network and library system development. The planning of library activities, drawing up a library development plan, developing library and information policies cover a whole complex of management information, including financial planning and a rational distribution and use of income and expenditure. The results of analysis and evaluation form the basis for developing informational infrastructure, avoid redundant duplication of activities and support rational use

of resources whilst at the same time meeting the needs of customers. This principle applies at the national level. It is especially important for East European countries, which have regained their independence and where the financial framework for libraries is not yet fixed and the state budget is lower and the financial possibilities much smaller than in the EU. (Sumsion, 2001)

Library network/system in Estonia

Libraries in Estonia come under different ministries and other authorities. Changes in the library system have taken place mainly in connection with the transformation of the economic structure, the changing territorial and administrative situation and a result of optimising library services. It is broadly true that there have been no unjustified library closures caused only by lack of funds. A legal framework for libraries exists similar to the general practice of library legislation in the democratic world. The Law of Public Libraries regulates activities and functions of public libraries. The National Library is regulated by the National Library Law and academic libraries follow university legislation. The Estonian libraries network is co-ordinated by the Ministry of Culture and Ministry of Education (Valm, 2000).

The network of Estonian libraries consists of 5 main levels: *research libraries* (national library, universal libraries, university libraries, special research libraries); *libraries of other higher institutions* (libraries of a private universities, libraries of a state nonuniversity higher educational institutions, library of a private nonuniversity higher educational institutions); *special libraries* (government libraries, health service/medical libraries, libraries of a professional or learned institutions and associations, industrial or commercial libraries, libraries of a cultural institutions, other special libraries); *public libraries* (central libraries, municipal libraries, children libraries, community libraries, rural libraries, other public libraries); *school libraries* (elementary school libraries, basic school libraries, secondary high school libraries, vocational school libraries, evening school libraries and hobby school libraries) (Appendix 1).

The total number of Estonian Libraries is 1,220. Among them 585 are public libraries, 542 school libraries and 93 research and special libraries. They employ 3,159 librarians, 1,180 in research and special libraries, 1,300 in public libraries and 679 in school libraries. Summarised reports of Estonian libraries statistics of all library types are issued every year in paper form (from the year 1994) and from the year 2001 published electronically too on the homepage of the National Library of Estonia. (Eesti raamatukogud, 2001)

National, academic, research and special libraries are an indispensable resource of science, research and development for Estonian scientists, students, specialists of various fields, organisations, institutions, enterprises and the whole academic and intellectual com-

munity of the country. The creation of the suitable research library network started at the beginning of the 1990, when as a result of optimising services some special and university libraries were merged.

There are 13 research libraries in Estonia - 1 National Library; 2 Universal libraries, 6 University libraries and 4 special research libraries. Eleven of them are central research libraries. The national library information system that involves mostly special, academic and research libraries is an inseparable part of the Estonian information infrastructure. The existing system enables to compile central bibliographic catalogues and make information resources accessible to every user. In order to co-ordinate acquisition of central research libraries, the Decree of the Minister of Culture and Education in 1995 specified their subject areas of acquisition. Today the basic principles of the financing of research libraries are being worked out, in particular for acquisition. There is now a law to regulate the work of all research libraries. A little problematic had been the financing of central research libraries because lack of finance prevents libraries acquiring all they need in their areas of specialisation. The distribution of the financial resources for acquisition between research libraries is under review, which involves discussing the use of acquisition sums allocated from the state budget (Nuut, 2000) with a view to co-ordinating the acquisition of scientific literature in the light of need. The budget for research institutes has decreased, increasing the importance of research libraries. There is a need to define target financing from the state budget to purchase and acquire scientific information.

In the course of reforming Estonian science in 1997, the Estonian Academy of Sciences, which had been an association of institutions, was reorganised into a personal academy, and its former institutes and research institutions were merged with universities. Financing two different systems of research institutions is too expensive for a small state. Now there is one joint system of universities for higher education and scientific research. The rather complicated reform has become effective and the majority of research institutions continue their work with universities. Universities also draw together the users of research libraries. In Estonia, financing for scientific research is allocated in the form of grants from the Estonian Science Foundation according to concrete subjects and applications.

In April 2001 the *Organisation of Research and Development Act* was passed, which regulates activities of research and archive libraries.

Performance measurement and quality evaluation studies in Estonia

Over the years there have been several projects on performance measurement in Estonia. There are long-term traditions of library user surveys in Estonian academic libraries. During the 1990s there were a lot of discus-

sions in academic libraries about the possibilities of measuring performance and a wide range of professional literature on performance measurement was consulted.

Three research libraries – the Estonian Academic Library, the National Library of Estonia and Tartu University Library were involved in the study of effectiveness of library services using the same methods based on the methodology and methods described in *Measuring Academic Library Performance. A Practical Approach*, a manual approved by the IFLA and used internationally (Van House 1990). The study carried out in Estonian libraries during 1994–1996 was a part of a major research program covering the Nordic and Baltic countries and led by the Royal Library of Sweden (Nuut, 1998)

The project of the evaluation of library services and performance measurement conducted in co-operation with the Royal Library of Sweden and Estonian research libraries was one of the largest joint research projects launched in Estonia over the last five years. The main objective of the project was to estimate the scope and results of user services, including reader satisfaction with services rendered by library. The task of the research was to identify the requirements of the reader body and evaluate their satisfaction with the level of services, the indicators of which were:

- The availability of the library resources,
- The quality of the services provided,
- The operating possibilities and working conditions at the library.

The experience of applying an international standard method of measuring library performance in major Estonian research libraries was certainly very illuminating. The experience had been considered in developing the future complex and unified surveys. The study brought forward a lot of valuable information, which has been processed, interpreted and reported at various scientific conferences as well in publications of the libraries (*Research libraries in public information systems*, 1998).

Some research projects of a larger scope were initiated in 1994–1999 to pursue the study in the field of performance measurement at a more advanced level to analyse information needs and general satisfaction of target populations and quantity of library performance, including library statistics analysis. Most academic libraries initiate studies on the quality of library performance every year. (Nuut, 1999b).

Current project *Performance Measurement and Evaluation of Research Libraries in Estonia*

At present the grant application to Estonian Science Foundation on the subject library performance measurement survey, *Performance Measurement and*

Evaluation of Research Libraries in Estonia, is accepted. The project will be carried out from 1 January 2000 to 31 December 2002. The institutions involved are the Tallinn Pedagogical University (Grant holder Aira Lepik, Department of Information Studies), National Library of Estonia and Tartu University Library.

The aim of the project is to analyse the performance optimality of research libraries, which are a part of the state system of information dissemination, under the present economic and financial conditions, and analyse research libraries' activities.

The main objectives of the project are:

- Adaptation of performance measurement methods to Estonian research libraries;
- Developing an econometric model to evaluate and optimise activities of Estonian research libraries (resources and costs, allocation of finances);
- Selection and analysis of performance indicators for research libraries to measure quantity, quality and effectiveness;
- Testing the model in the libraries who have joined the consortium of Estonian Libraries Network (ELNET);
- Monitoring library performance to support practical steps forward in the implementation of quality and quantity assessment and management; identify practical measures covering performance indicators (monitoring) – efficiency (use), economy (cost) and effectiveness (quality);
- Specification of the levels of performance measurement and their use in measuring and evaluating research library performance on resource, activities, function, service and library level;
- Standardisation to support the adaptation and use of international standards (ISO) on library performance measurement and quality evaluation, to optimise and harmonise standardisation;
- Benchmarking to encourage research libraries to use benchmarking models for library performance assessment, to start comparing libraries' activities with good practice and good ideas; and,
- Education and training of information professionals
- Organise training courses, seminars and scientific conferences for librarians on library performance measurement and quality evaluation, introducing the subject, methods and methodology, and encouraging collaborative research projects;
- Introduce the principles of TQM (Total Quality Management); and,

- Further develop the Library Information Science (LIS) curriculum of Bachelor of Arts (BA) and Master of Arts (MA) studies with new subjects on library performance measurement and quality, quality of library services (new research methods on service quality as LibQUAL+, SERVQUAL, and Scorecard), and library economics.

Proposed importance of the project:

The functioning of research libraries as an information environment for Estonian science, culture, economy and education requires a thorough and many-sided analysis, and scientifically well-grounded planning of these libraries activities. As the result of the project, there will be a well-founded basis for regarding academic libraries as the development-inducing factors in the society, and it will enable to achieve better results in dealing with the problems of managing the quality of information dissemination. This analysis supports and promotes the position of Estonian research libraries on the information highway of Europe and the whole world.

The study should:

- Be useful to librarians of all library sectors;
- Be useful for policy makers;
- Lead librarians to an improved understanding and more effective use of library statistics as management information, and encourage them to co-operate in and standardise their recording methods;
- Examine the feasibility of maintaining the statistical and associated econometric information about library activities.

The project, *Performance Measurement and Evaluation of Research Libraries in Estonia*, will focus on LIS education and studies, including defending of MA degrees and concerning the following subjects:

- Library performance measurement and evaluation: possibilities for extending performance measurement (PM) and benchmarking methods in Estonian research libraries in 1995–2000;
- Estonian academic libraries' information system and optimisation of their activities; and,
- Information users at the National Library of Estonia: information needs and the quality of services.

As this is a three-year project and application for financing is submitted every year, the above-mentioned objectives are submitted for the overall project period 2000–2002.

The first stage of the project in 2000 included:

- Preparations for the survey;
- Introduction of objectives to Estonian librarians and the students and post-graduate students of Tallinn Pedagogical University;
- Choosing methods for performance measurement and analysis;
- Choosing performance indicators to be analysed; and,
- Performing quantitative analysis of Estonian research libraries' performance using library statistics.

Current approach to library performance measurement in Estonia in 2000 under the project Performance Measurement and Evaluation of Research Libraries in Estonia:

1. Introduction of performance measurement, benchmarking and the Estonian research libraries' recent project by the authors of paper (Benchmarking for quality assessment and management for libraries; Choosing the library performance indicators: specifics of academic libraries; Library performance measurement and benchmarking survey in Estonian research libraries in 1998–1999; Overview of SERVQUAL methods on library performance quality; Library performance indicators: Definition and assessment; Scientifically information and academic libraries; Marketing and research libraries: customer satisfaction and service quality; Complex survey on music and art information use of the National Library, Music Academy Library and Art Academy Library customer target groups).
2. Development of the course *Library Performance Measurement and Quality Evaluation, Benchmarking* for the MA degree (Benchmarking in librarianship: the tool of quality management; Use of scorecard methods in library performance measurement and service quality assessment). Elective course *Library Performance Measurement and Quality* (3.0 credit points) on the curriculum of Information Science Master Studies program of Tallinn Pedagogical University was accepted in the University Council (full accreditation on May 2001). The course will start in spring 2002 and course handbook *Library Performance Measurement and Quality* will be compiled for the year 2003.
3. Determine and choose statistical and sociological study methods on library performance measurement and quality evaluation. To meet the requirements of the project and find suitable methodology, we have turned to several specialists and

experts from the UK (David Fuegi, Phillip Ramsdale) and Germany (Roswitha Poll, Jürgen Heeg), who have provided their expert evaluation and advocacy during training courses held in Tallinn on performance measurement and benchmarking in 1999 and 2000.

4. The principles, guidelines and recommendations of UNESCO, ISO and IFLA have been followed in finding the methods of quantitative analysis of library performance, and establishing the basis for gathering and analysing library statistics. In recent years the questionnaire forms and instructions of library statistics have been improved according to the internationally used basis for keeping statistics, statistical definitions and requirements for gathering statistics and processing the data presented by the EC project LibEcon2000.

In Estonia gathering, analysing and providing overviews of state statistics is regulated by State Statistics Act (approved in 1997 and amended in 2000). The Estonian State Statistical Office is responsible for organising statistical surveys and provides overviews in annual collections for education, culture and science. The National Library of Estonia is a national statistical centre that is gathering and publishing overviews and analysis of library statistical data in annual collections for all library sectors (the obligation fixed in the National Library of Estonia Act) and, at the same time, responsible for gathering and providing statistics of print production.

ISO 2789:1991, *Information and Documentation: International Library Statistics*, where the basic principles of gathering library statistics, the definitions of statistical units and guidelines for gathering statistical data are published and ISO 11620:1998, *Information and Documentation: Library Performance Indicators*, where the basis of the analysis of library statistics, performance measurement and library economics are published. Both above mentioned ISO standards are adopted as Estonian standards by the National Standards Board of Estonia (EVS-ISO 11620:2000).

Activities in the field of standardisation in Estonia had been directed and co-ordinated by the National Standards Board since 1991, after the re-establishment of independence in Estonia. The translation and adoption of the standards ISO 2789 and ISO 11620 as Estonian national standard was initiated by the Library Science and Development Department of the National Library of Estonia. The aim of adaptation of these standards was to promote the activities of performance measurement and quality assessment in Estonia.

5. The study, *Library performance measurement and evaluation: possibilities for extending PM and benchmarking methods in Estonian research libraries in 1995-2000*, was also carried out. The study focused on the possibilities to use the analysis of the statistical data of 1995-2000 of four Estonian major research libraries - The National Library, Estonian Academic Library (universal library), and two academic libraries - Tartu University Library and Tallinn Technical University Library.

The survey focused on library resources (collections), library services (visits, loans), librarians (education and qualification), and financial resources (income and expenditure). The statistical analysis focused on three aspects and was presented on three stages:

1. The descriptive statistics analysis, which presents graphical analysis of the data and brings out current trends;
2. The inferential statistics analysis, which treats the second stage of data analysis, comparison of four libraries - benchmarking; and,
3. The library economics analysis, which presents the econometric concepts and results of econometric surveys.

At the first stage of statistical analysis - the descriptive part of the analysis on the institutional level - the time series of the four libraries' indicators are given:

- *The collection development and changes indicators* - additions, the three-year average of additions, rate of additions, the proportion of additions and weeding, acquisition sources;
- *Expenditure indicators* - main expenditure (staff expenditure, costs of acquiring documents for the collection, communal expenditure, investments) in 1995-2000;
- cost indicators per user and per visit (yearly expenditure per user, cost per library visit, acquisition expenditure per user, staff expenditure per user) in 1995-2000;
- *Library service indicators* - the number of library users, visits and loans in 1995-2000;
- *Indicators of library staff* (total number of staff members, including librarians) and education of librarians (librarians with higher education, including the employees with higher library education).

The following performance indicators have been chosen for analysis:

COLLECTIONS:

- 1) Resources additions rate (% new stock added in year)
- 2) Acquisition rate
- 3) The proportion (%) of books among annual additions
- 4) The proportion (%) of serials among annual additions
- 5) The proportion (%) of electronic documents among annual additions
- 6) The number of documents placed to open access (shelves)

LIBRARY SERVICE

- 1) Usage frequency
- 2) Frequency of attendance
- 3) Users per librarian
- 4) Loans per librarian
- 5) The proportion (%) of requests supplied by interlibrary lending

THE LIBRARIANS' QUALIFICATION

- 1) Librarians with higher education among library staff
- 2) The proportion (%) of employees with higher library education among library staff with university education

EXPENDITURE AND COST INDICATORS

- 1) The proportion (%) of the costs of acquiring documents for the collection from total expenditure
- 2) The costs of acquiring documents for the collection per user
- 3) Cost per document (Expenditure per document from acquisition budget)
- 4) Cost per user
- 5) Cost per visit
- 6) The proportion (%) of staff expenditure from total expenditure
- 7) The average staff expenditure per user

(Ward, 1995; Poll, 1996; EVS-ISO 11620:2000)

The analysis of presented performance indicators provides an opportunity to draw conclusions on the collection acquisition, library use, frequency of attendance, librarians education and competency, as well as distribution and use of financial resources of libraries. The study results of the four research library indicators helped us to optimise research libraries' acquisitions policy and acquisition budget delivery. The coefficient of additions rate in Estonian research libraries was 99% in 1996–2000. However, there occur big differences between different libraries, including university libraries. That means that the financing of acquisition is unstable.

The proportion of books among annual additions of research libraries is approximately 60% and the proportion of serials – approximately 21%; the proportion of electronic documents among additions is quite low – 5%. Documents placed on open shelves only make up 4.2% of total resources of the analysed four libraries. The average frequency of attendance of the four research libraries in 1995–2000 was 16 visits per user; university libraries were visited more frequently – the rate was 30–40 visits per user. There were 140 users and 3283 loans per librarian of the research libraries. The average percent of supplied interlibrary loans was 66%, the rate being, however, higher in the National Library – 84%.

In 2000 the staff of the four research libraries, on average, included 79% of librarians with higher education (the average of the six years was 83%). The proportion of employees with higher LIS education among the staff with university education was 50%. However, there are big differences between research libraries. University libraries employ numerous subject librarians with university diplomas in other fields than LIS.

A cost analysis indicated that the average acquisitions expenditure of research libraries was 36% and staff expenditure 42% of the total budget. The average acquisitions cost per user in research libraries was 364 EEK (20 \$), with big differences between libraries. Annual expenditure per one unit was approximately 283 EEK (16 \$). The average cost per user was 797 EEK (44 \$) and average cost per visitor – 77 EEK (4 \$) (Appendix 2).

Conclusion

The first stage of the project focused on the analysis and organisation of Estonian library statistics with an aim to provide it to libraries as a valuable management information, for better organisation of their acquisition, services, work and financing. The statistical analysis was based on the methods used for analysing statistical data, mathematical formulas, compiling time series, and methods used for calculating performance indicators. Original statistical questionnaires provided by libraries were used as sources of statistical data. The demand for

quantitative analysis of research library performance has been increasing for years.

Such surveys are necessary for:

- Drawing up library development plans;
- Working out the financial basis for the library system;
- Working out the financial basis for research libraries' acquisitions;
- Developing an integrated research libraries acquisition policy, which would determine every libraries' responsibility areas, and acquisition principles of a resource library to avoid duplication and cut the costs;
- Evaluating library effectiveness; and,
- Strategic planning of library activities and making changes in library work organisation, budget planning and redistribution.

The National Library of Estonia has kept Estonian library statistics, managed statistical data, the basis for record keeping and analysing methods, as well as provided data analysis for the different library sectors since 1993. The methodology of quantitative analysis of statistics needs to be improved with new methods, including methods for analysing library performance indicators in the electronic environment, and the introduction of benchmarking models for assessing library work. Quantitative analysis is only a part of library performance measurement which requires additional research of library work quality - user surveys for determining overall user satisfaction, analysing the needs of information consumers, market research of services using various questionnaires and accepted methods of LibQUAL+, SERVQUAL and balanced scorecard (Lepik, 2000, 2001). Every library is different, despite the existence of fixed types. This is especially felt in the case of research libraries. The role, goals and tasks of research libraries differ to a great extent. Thus, we need to consider the distinct features of each research library, its mission statement and social impact while assessing its performance.

Estonian libraries have started with quantitative and quality analysis. However, this has not yet developed into a systematic and regular process to develop organisational activities, provide basis for planning activities, development policies, state financial policy and procurement of state resources. There is a need to draw up a library development policy and financial basis, based on research. At present, library statistics is still the only compact data gathering on which we can provide data analysis of all library (types) sectors.

The development plan of Estonian research libraries was initiated in the spring of 2001. Today, research libraries have discussed it, and it will be forwarded to the Commission of Culture of the Estonian Parliament

for discussion and approval in autumn 2001 (Eesti raamatukogud 2001).

Estonian libraries have been consulted and trained for gathering and analysing library statistics within the framework of the EC projects, LibEcon 2000 (Nuut 1999c), and they have been recommended to follow *Guidelines for the preparation of plans* (DCMS - Department for Culture, Media and Sport. Libraries Information and Archives) UK, in drawing up our development plan and further activities of libraries, as well as the library economics analysis of European libraries presented in the final report of LibEcon 2000, *Millennium Study* (Sumsion, 2001).

In the future, it would be rational to focus on working out library performance indicators considering the types of libraries, and apply performance measurement to all library sectors. It is necessary to get a complete overview of the quantitative and qualitative aspects of performance in all library sectors to ensure the development of the Estonian library network, drawing up a development policy and developing an integrated state financing policy.

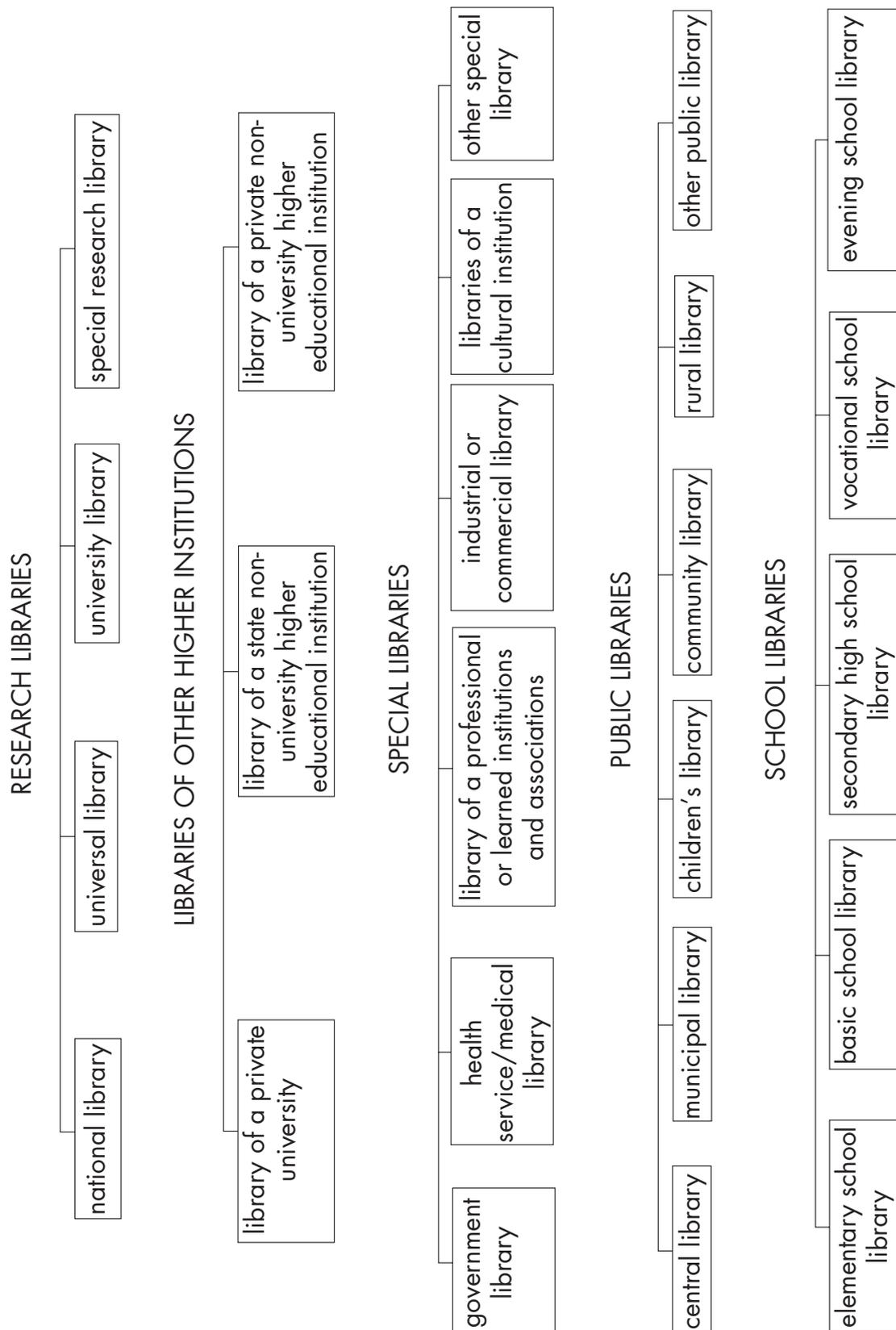
References

- Cullen, R. (1998) "Does Performance Measurement Improve Organisational Effectiveness? A Post-modern Analysis." School of Communications and Information Management Victoria University of Wellington, New Zealand in Proceedings of the 2nd Northumbria International Conference on Performance Measurement in Libraries and Information Services, held at Longhirst Management and Training Centre, Longhirst Hall, Northumberland, England, 7 to 11 September 1997:3-20. Newcastle upon Tyne: Information North
- Eesti raamatukogustatistika 2000/ Estonian Libraries Statistics 2000.
<<http://www.nlib.ee/rkogud/rst-stat.html>>
Eesti raamatukogud/Estonian Libraries.
<<http://www.nlib.ee/rkogud/rkogud.html>>
- EVS-ISO 11620:2000. Informatsioon ja dokumentatsioon. Raamatukogutöö tulemuslikkuse indikaatorid (2000) = Information and documentation. Library performance indicators. Tallinn: Eesti Standardiamet. (Eesti standard; EVS-ISO 11620:2000)
- Lepik, A. (2001) "Assessment of service quality in research libraries - Estonian approach" in *Knowledge, Information and Democracy in the Open Society: the Role of the Library and Information Sector*. Proceedings of the 9th International BOBCATSSS Symposium on Library and Information, January 29-31, 2001, Vilnius, Lithuania: 229-237. Vilnius: Vilnius University
- Lepik, A. (2000) "Sharing success: marketing of research library services" in *Library as Information Gateway to the New Millennium*. Proceedings of

- the 6th Congress of Baltic Librarians. October 5-6, 2000, Vilnius, Lithuania: 256-259. Vilnius: Lithuanian Librarians' Association
- Nuut, A. (1999a) "Assessment of library performance: criteria, performance planning, performance indicators and benchmarking" (in Estonian) Raamatukogutöö hindamine: kriteeriumid, tegevuse planeerimine, tulemusnäitajate võrdlev analüüs. Library Journal: *Raamatukogu*, (4): 14-17.
- Nuut, A. (1999b) *International and National Research and Development Projects in the National Library of Estonia*. Paper presented at the International summer seminar LiLaEst '99 "The National Library: the Years of Transitions," June 15-17, 1999, Pakreutone, Lithuania: 8
<<http://www.lnb.lt/events/lilaest/nuut.html>>
- Nuut, A. (1998) "Performance Measurement and Quality Evaluation: a User Satisfaction Survey in the National Library of Estonia" in *Research Libraries in Public Information System: Towards Performance Quality*. Acta Bibliothecae Nationalis Estoniae 8. Tallinn, 1998:101-111
- Nuut, A. (2000) *Development Patterns of European and Estonian Academic Libraries*. (in Estonian). Akadeemiliste raamatukogude arengusuundadest Euroopas ja Eestis. In: Muutuv ülikooliraamatukogu : TTÜ 80. aastapäeva teaduskonverents 11. november 1999: teeside kogumik. TTÜ töid A2 : Changing Academic Library. Proceedings of the Conference Dedicated to the 80th Anniversary of the Tallinn Technical University Library. November 11, 1999:121-130. Tallinn : Tallinna Tehnikaülikooli Kirjastus
- Nuut, A (1999c) *International co-operation of Estonian Research Libraries*. Eesti teadusteatukogude rahvusvaheline koostöö. Eesti Raamatukoguhoidjate Ühingu Aastaraamat 11, 1999: YearBook of the Estonian Librarians Association, 11:28-44. Tallinn, 2000.
- Poll, R. and Boekhorst, P. (1996) *Measuring quality: international guidelines for performance measurement in academic libraries*. IFLA Publications 76. Munich: K.G. Saur. 171p.
- Ramsdale, P. and Fuegi, D. (1997) *Library Economics in Central and Eastern Europe. Libraries in the Information Society*. Luxembourg: EUR 18042EN. Office for Official Publications of the European Communities
- Research libraries in public information system: towards performance quality (1998) Teadusraamatukogud riiklikus infosüsteemis: teeninduskvaliteedi hindamisest. Comp. By A. Norberg, edited By A. Nuut. Tallinn: National Library of Estonia. (Acta Bibliothecae Nationalis Estoniae/ABNE VIII = Eesti Rahvusraamatukogu toimetised/ERRT VIII)
- Sumsion, J.; Ramsdale, P.; Fuegi, D. et al. (2001) *Library Economics in Europe. Millennium Study*. Final Report. LibEcon2000.
<<http://www.LibEcon2000.org>>
- Valm, T. (2000). *Estonian library science in the past decade*. Nordinfo-Nytt, 2
<http://www.nordinfo.helsinki.fi/publications/nordnytt/nnytt2_00/valm.html>
- Valm, T. (1999) *Legislation adopted in the Estonian library system 1991-1999*. Paper presented at the International summer seminar LiLaEst'99 "The National Library: the Years of Transitions", June 15-17, 1999, Pakreutone, Lithuania
<<http://www.lnb.lt/events/lilaest/valm.html>>
- Van House, N.; Weil, B.; and McClure, C. R. (1990) *Measuring Academic Library Performance: A Practical Approach*. Chicago, IL: ALA
- Van House, N. (1995) "Organisation Politics and performance Measurement: in *Proceedings of the 1st Northumbria International Conference on Performance Measurement in Libraries and Information Services*, held at Longhirst Management and Training Centre, Longhirst Hall, Northumberland, England, 31st August to 4th September 1995. Newcastle upon Tyne: Information North: 1-10
- Ward, S.; Sumsion, J.; Fuegi, D.; and Bloor, I. (1995) *Library performance indicators and library management tools. Libraries in the Information Society*. Luxembourg: Office for Official Publications of the EC

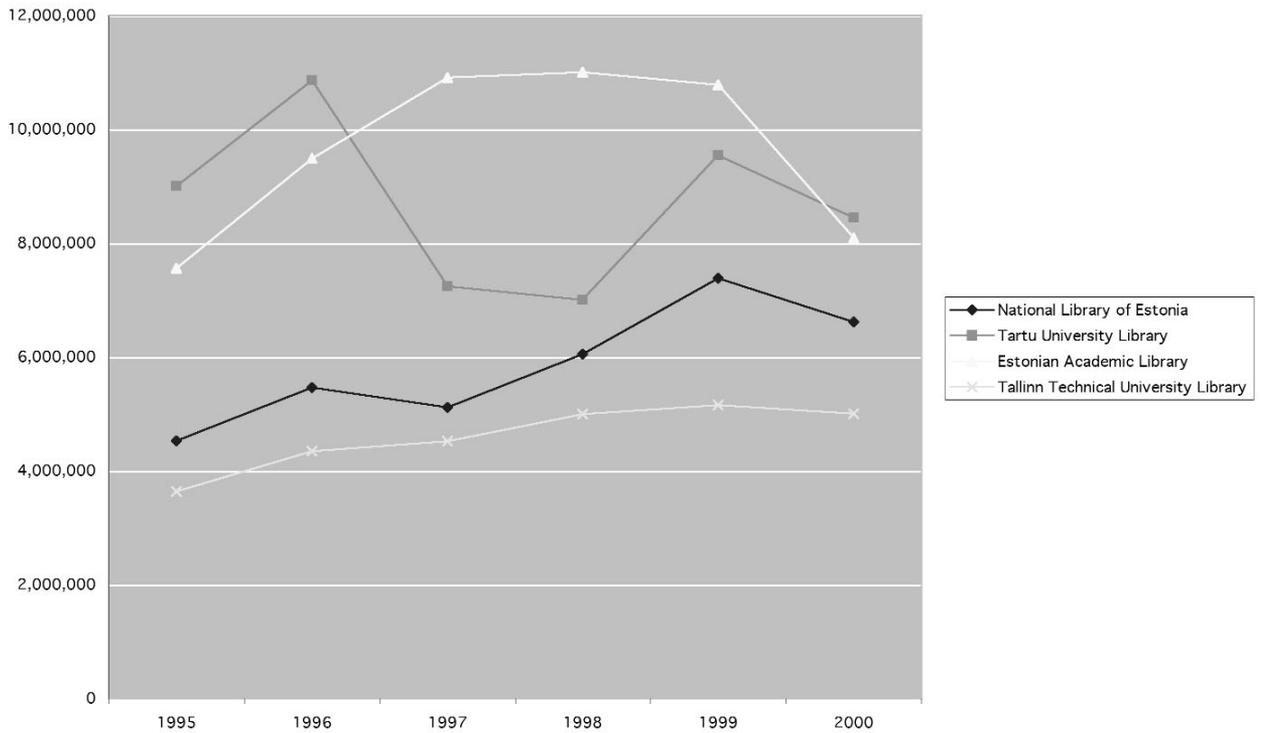
Appendix 1

Table 1. ESTONIAN LIBRARIES NETWORK

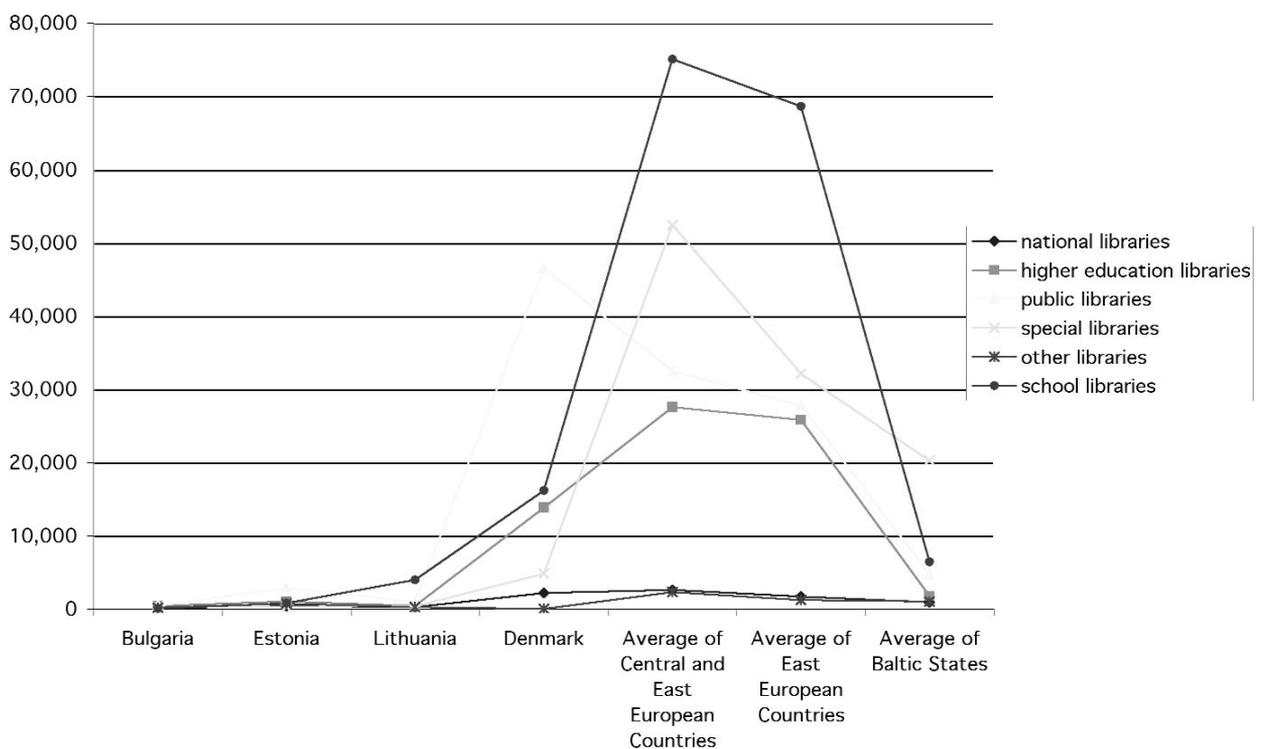


Appendix 2

Acquisition expenditure of the National Library of Estonia. Estonian Academic Library. Tartu University Library and Tallinn Technical University Library 1995-2000

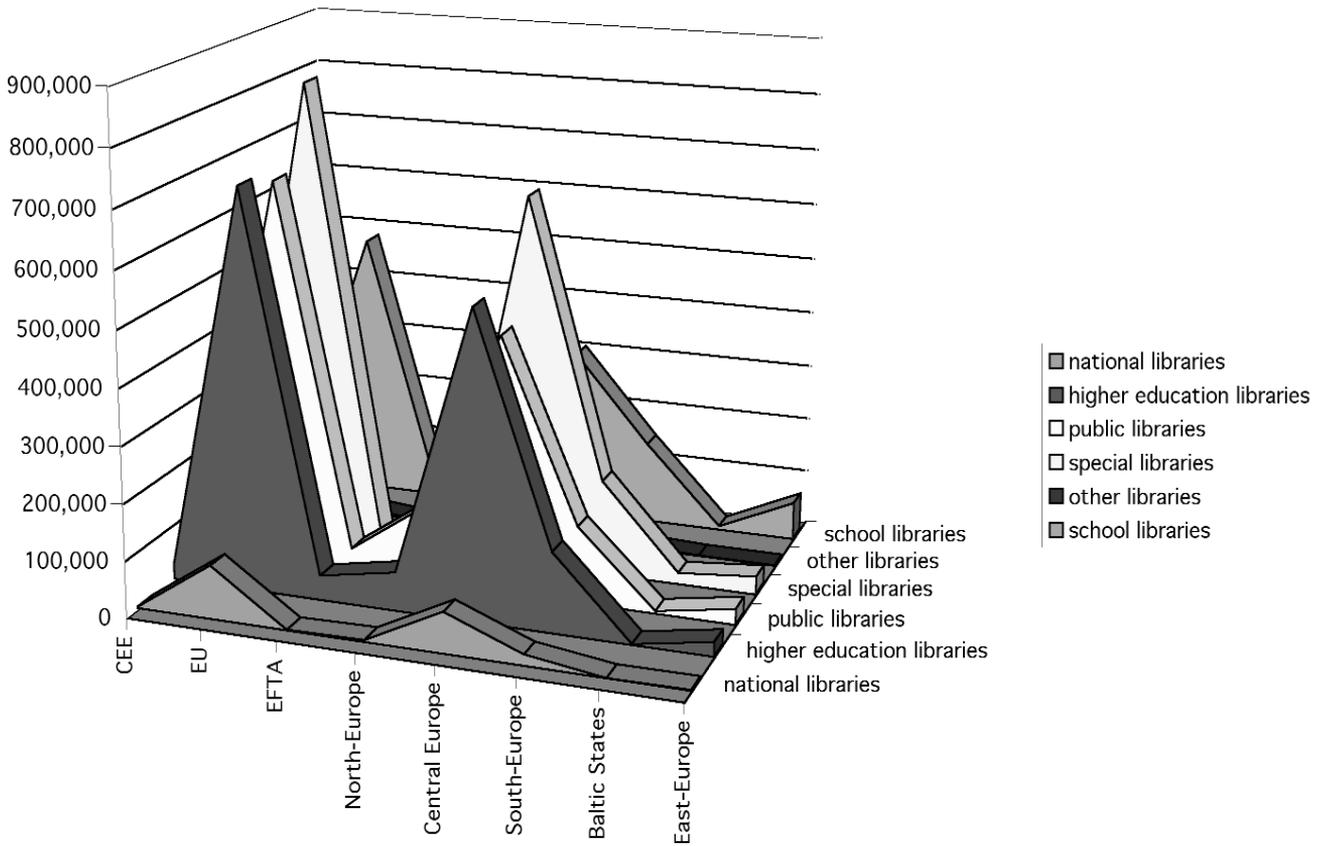


Acquisition expenditure of European libraries (EUR) in 1998



Appendix 2

Libraries in Europe: acquisition expenditure in 1998 (EUR)



Libraries of higher education in Europe: acquisition expenditure in 1998 (EUR)

