

The Austrian Library Planning Model

Information use: USA versus Austria

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Table of contents

List of tables	3
Abstract.....	4
1 General introduction	5
1.1 About the project.....	5
1.2 Objectives of this report	5
2 Data sources	5
2.1 Austria: university data.....	6
2.2 Austria: library data.....	7
2.3 United States: university and library data.....	8
3 Methodology	8
4 Calculation of average values according to Statistics Austria data.....	10
4.1 Calculation of average values for input data	11
4.2 Calculation of average values for output data.....	12
5 Differences between U.S. and Austrian libraries according to the LPM.....	12
5.1 General reasons for differences.....	12
5.2 LPM data versus Statistics Austria data	13
5.2.1 Number of library visits	13
5.2.2 Circulation (number of loans).....	14
5.2.3 Staffing.....	16
6 Data uncertainties and restrictions	18
6.1 Faculty staff and student data.....	18
6.2 Library data	19
7 Summary	19
8 Outlook.....	20
9 Bibliography.....	21
10 Appendix A – Statistical data	22
11 Appendix B – LPM Parameters	27
12 Appendix C – LPM Calculations.....	30

List of tables

Table 1: Population and university data	6
Table 2: Data entry table for library users in LPM	9
Table 3: Actual staff distributions according to LPM	10
Table 4: Average values of the Austrian average university library (input data)	12
Table 5: Average values of the Austrian average university library (output data)	12
Table 6: Comparison of adapted indicators (output data)	20
Table 7: Student data used for analyses	22
Table 8: University staff data	23
Table 9: Number of holdings, print journals and new acquired media	24
Table 10: Circulation, interlibrary loans and library visits	26
Table 11: LPM parameters – users data	27
Table 12: LPM parameters - materials data	28
Table 13: LPM parameters - workload factors	29
Table 14: LPM calculation - reader services staff - circulation	30
Table 15: LPM calculation - reader services staff - reference	31
Table 16: LPM calculation - technical services staff - acquisition	32
Table 17: LPM calculation - technical services staff - cataloging (main calculations)	33

Abstract

This work is part of a larger project, which measures library-like information management functions in industries. Information management functions are all activities and processes that can be related to information selection, information acquisition, information description, information preservation etc. These functions are well defined in libraries and are therefore the starting point of our project.

The focus of this report is the measurement of information management functions in Austrian university libraries. The Library Planning Model (LPM) is a tool, which is used to determine time and as a result staff needed to accomplish these information management functions in libraries. This tool has been developed for Anglo-American libraries and needs to be adapted to the situation of Austrian university libraries in this project. Three factors were used for the adaptations: number of library visits, number of staff, and number of loans. These data are readily available in official statistics. The results we get from the LPM are two staffing categories: "staffing needed for serving library users" and "staffing needed for processing of media acquired". These results are important links to the information management functions in industries and will be the basis for calculations of those or the corresponding values.

Keywords: Library Planning Model, United States, Austria, adaptations, university libraries

1 General introduction

This report focuses on information management functions in libraries, which are the starting point of a larger project¹. It follows a methodology developed by Robert M. Hayes (2001), who has already conducted similar research in the United States and Croatia.

This report will present the first part of the indicated project, which deals with measurement of information management functions in Austrian university libraries. Since the Hayes methodology has been developed for the Anglo-American library environment, several changes need to be made to adapt the main tool, the Library Planning Model (LPM), for Austrian university libraries. The analyses presented in this report will pursue this goal.

1.1 About the project

The above mentioned project deals with library-like information management functions, i.e. all functions and processes related to information selection, information acquisition, information description, information preservation and the creation of information products and information services. The fundamental assumption is that these functions do not only occur in libraries and information centers but also in economic contexts and particularly in industries with high information needs. The information management functions in Austrian university libraries will therefore serve as a starting point when analyzing these industries.

1.2 Objectives of this report

The primary goal of this report is to adapt the "American"² version of the Library Planning Model (LPM) and to get, as a result, the so called "Austrian average university library" based on LPM calculations. This average university library does not correspond to any real Austrian university library.

It is important for us to point out that it is not the goal of this report to provide any kind of ranking of American and Austrian libraries. Whereas it is the goal to show, where differences concerning university libraries occur, what the reasons for these differences could be, and which changes we have to make in order to get to the LPM Austrian average university library.

2 Data sources

Section two describes the relevant data sources necessary for our analyses. Basically, two different sources are used, university and library data.

¹ "Information management functions in national economies: an analysis of the information sector in Austria" funded by the Jubiläumsfonds of the Austrian National Bank; see project details at http://www.uni-graz.at/iwiwww/f_imf.html

² The original version of the LPM is the Anglo-American version. In this report the original version is called "American" version, to distinguish it from the adapted Austrian version.

To give a basic idea about the large differences between the United States and Austria we are dealing with in this report, we would like to present a few absolute numbers.

	Austria	United States
Population	8.2 mil. ³	301.1 mil. ³
Public universities	21	236 ⁴
Students	ca. 200,000	ca. 4,000,000 ⁵

Table 1: Population and university data

According to these numbers, the United States have 37 times the population of Austria, ten times the number of public universities and 20 times the number of students of Austria.

2.1 Austria: university data

In Austria the number of universities has been steadily increasing in the past ten years. There are currently 21 universities in Austria, which offer diploma, bachelor, master, and doctoral studies. There is only one university, the Donau University Krems, which has specialized in postgraduate continuing education. According to its focus it does not offer any undergraduate programs and therefore is not included in the list of universities in this report.

The 21 universities are:

1. University of Vienna
2. University of Graz
3. University of Innsbruck⁶
4. University of Salzburg
5. Vienna University of Technology
6. Graz University of Technology
7. University of Mining Leoben
8. University of Natural Resources and Applied Life Sciences, Vienna
9. University of Veterinary Medicine Vienna
10. Vienna University of Economics and Business Administration
11. University of Linz

³ Source: <https://www.cia.gov/library/publications/the-world-factbook/>

⁴ Number of research and PhD awarding institutions according to Carnegie categories 11, 12, 13, 14

⁵ Number of students in research and PhD awarding institutions according to Carnegie categories 11, 12, 13, 14

⁶ The University of Innsbruck and the Innsbruck University of Medicine share one library. So in the data analyses in this paper, there is just one library for these two institutions.

12. University of Klagenfurt
13. University of Applied Arts Vienna
14. University of Music and Performing Arts Vienna
15. University of Music and Dramatic Arts "Mozarteum" Salzburg
16. University of Music and Dramatic Arts Graz
17. University of Art and Industrial Design Linz
18. Academy of Fine Arts Vienna
19. Vienna University of Medicine
20. Graz University of Medicine⁷
21. Innsbruck University of Medicine⁸.

In the past few years, these universities had to cope with two major changes. One important change was the Austrian Universities Act 2002⁹, which gave financial autonomy to Austrian universities and which was the legal basis for three autonomous medical universities. The second major change was initiated by the Bologna process. According to it Austrian universities had to adapt their study programs to international standards. Therefore, Austrian universities are currently in the phase of transition from former diploma studies to new bachelor and master studies.

The data for the number of students, faculty and general staff¹⁰ are provided by the data warehouse published by the federal ministry for science and research (see tables in Appendix).

2.2 Austria: library data

In Austria there is only one major source for library statistics. Statistics Austria¹¹ is a non-profit federal institution under public law, which provides data for nearly all university libraries.

⁷ The Graz University of Medicine library does not provide any statistical data, so the library for this institution is not included in the data analyses in this paper.

⁸ The University of Innsbruck and the Innsbruck University of Medicine share one library. So in the data analyses in this paper, there is just one library for these two institutions.

⁹ Universities Act 2002, January 2008, Federal Ministry for Science and Research http://www.bmwf.gv.at/fileadmin/user_upload/wissenschaft/recht/englisch/E_UG.pdf

¹⁰ UNIVERSITIES ACT 2002, Part III, University Members, Chapter 1, Classification; § 94. The non-academic university staff comprises the administrative staff, the technical staff, the library staff, the nursing staff, physicians exclusively engaged in public hospital duties and physicians in specialists' training.

¹¹ Statistics Austria http://www.statistik.at/web_en/

Since 1997 Statistics Austria has been conducting annual library surveys. The current questionnaire comprises 33 questions about type of library, holdings, journals, acquisitions, users, loans, online usage, staffing and expenditures.

There are other statistical initiatives, where Austrian libraries participate. The German "Bibliotheksindex (BIX)"¹², for example, is primarily a performance measurement tool, which offers valuable additional information concerning library data.

Since no other statistical initiative offers such complete sets of data as Statistics Austria, these sources are not taken into consideration in this report.

As already indicated above, Austria has 21 universities, but only 20 university libraries. As a matter of fact, Innsbruck medical university has not its own separate library but shares it with the University of Innsbruck, which reduces the number of libraries to 20.

Beyond that, one library did not provide data to Statistics Austria, therefore only 19 university libraries will be considered in our analyses.

2.3 United States: university and library data

Statistical data about American universities and university libraries have been taken from the National Center for Education Statistics (NCES)¹³. University data are provided on an annual basis, reports for academic libraries are published biennially, classified by the Carnegie Classification Code¹⁴. This classification includes all colleges and universities in the United States that are degree-granting and accredited by an agency which is recognized by the U.S. Secretary of Education.

3 Methodology

This section presents an overview of the methodology, which was used in the analyses. The methodology used is the Library Planning Model (LPM), which relates workloads to staffing requirements.

The LPM is a tool for estimating staffing requirements to meet identified workloads on library functions such as information services (circulation, reference), information acquisition (collection development), information description (cataloging), information preservation (conservation), etc.

The LPM is an Excel spreadsheet model, which is based on several matrices relating to clients and services for clients and to materials and technical processes for materials. In each case, the first matrix contains data necessary for determining workloads involved, the second contains data for determining the extent to which workloads use specific services or processes; and the third contains workload factors as means for estimating required staff.

¹² BIX <http://www.bix-bibliotheksindex.de/>

¹³ Source: <http://nces.ed.gov/>

¹⁴ The Carnegie Classification of Institutions of Higher Education is the main categorization code of American colleges and universities; <http://www.carnegiefoundation.org/Classification/downloads.htm>

In the model, workloads are considered in two major categories: those related to services of the populations served (reader services) and those related to internal processing of the materials acquired (technical services).

Input data

The data to be entered in the LPM include average values of numbers of users, holdings and number of acquired materials.

User data:

- number of general staff (FTE)
- number of employed faculty staff (FTE)
- number of fully enrolled graduates and undergraduates
- number of interlibrary loans

USAGE BY POPULATION TYPES	TOTAL POPULATION	USER %	USES/ USER	TOTAL USES
Staff	600	25%	50	7500
Faculty	974	100%	90	87660
Graduate Students	2386	100%	60	155160
Under-Graduate Students	19289	100%	45	868005
Institutions (ILL Lending)	5920	100%	1	5920
Researchers		100%	25	
Informed Public		100%	25	
General Public		1%	9	
Total Uses				1124245

Table 2: Data entry table for library users in LPM

Holdings (materials data):

- total number of books

Acquisition (materials data):

- number of new acquired books
- number of serials subscriptions acquired annually

Output data

LPM applies workload factors to input data. These workload factors are the estimated times for library staff to perform a library specific transaction. As a result, LPM provides estimates for the staff required for both library functions: reader services staff and technical services staff.

Technical services staff (FTE) is composed of the following functions:

- acquisition
- cataloging

- conservation

Reader services staff basically contains two functions

- circulation and
- reference.

Each function is the product of a multiplication of workloads and time estimated for these workloads and contains intellectual, procedural and physical work elements.

FUNCTION	READER SERVICES	TCH SERVICES	SUPERVISE/MANAGE	G & A	TOTAL
Manage Library				12,00	12,00
Reference	18,00		3,00		21,00
Circulation	30,00		6,00		36,00
Collection Development		23,00	5,00		28,00
Catalog		15,00	3,00		18,00
Conserve					
Publish		5,00	1,00	1,00	7,00
TOTAL	48,00	43,00	18,00	13,00	122,00
RESULTS FROM MODEL	52,46	34,55	16,53	15,53	119,08

Actual staff distribution

Output data, estimates for staff calculated by the LPM

Table 3: Actual staff distributions¹⁵ according to LPM

Additionally, the LPM provides two more categories: “Supervise/Manage” and “G&A”. While “Supervise/Manage” relates to tasks such as supervision, assignment and scheduling, assessment and evaluation, “G&A” (general management and central administration) relates to tasks dealing with accounting, personnel and systems and includes, for instance, also the activities of the library director.

4 Calculation of average values according to Statistics Austria data

As already mentioned above, the basis for all calculations was the Austrian average university library. It was therefore necessary to calculate the average values for all data we were dealing with in our analyses.

¹⁵ The table “ACTUAL STAFF DISTRIBUTION”¹⁵ shows the comparison of actual data (blue numbers plus the sum per staff category “TOTAL”) with the “RESULTS FROM MODEL”, which are provided by the LPM.

4.1 Calculation of average values for input data

In a first step we calculated the average values for all input data, starting with user data.

The calculation of average values for general staff, faculty staff and for the number of interlibrary loans was quite straight forward, because no data were missing. There is only one particularity, which we would like to mention. As Innsbruck medical university and Innsbruck university share one university library, their user numbers have been summed up and treated as data from one university. The total number of universities considered in these calculations is 19 and therefore each indicator has been therefore divided by this factor.

The calculations for the average student numbers were more extensive. In order to use the number of students in the LPM we had to divide it into two groups, undergraduates and graduates. As Austria is currently in the phase of transition from the former two-cycle system (diploma and doctorate studies) to the three-cycle system (bachelor, master and doctorate studies) it is difficult to determine the ratio undergraduate to graduate students. The category which could not be assigned precisely is the group of diploma students. They may be counted as undergraduates in their first years, but during the final phase of writing their thesis they are already comparable to master students. We therefore split the number diploma students; the ratio we determined is 3:1 (3 = bachelor students, 1 = master student).

The determination of this ratio is reasoned as follows: since the first three years of bachelor and diploma studies are comparable, three fourth of the students enrolled in diploma studies are counted as undergraduates, only the last year of diploma studies (one fourth) is counted as graduate studies. Based on this ratio we counted bachelor and 75% of diploma studies as undergraduates and 25% of diploma studies, master and doctorate studies as graduate studies. Based on this distribution we got a ratio of graduates to undergraduates of 27% to 73%, which is relatively close to the ratio at American universities (about 1:2). The Austrian ratio has then been applied to the average number of fully enrolled students at Austrian universities.¹⁶

The input values for the Austrian average university/university library look as follows:

AUSTRIAN AVERAGE UNIVERSITY/UNIVERSITY LIBRARY	
GENERAL STAFF	549
FACULTY STAFF	562,8
GRADUATE STUDENTS	2.975
STUDENTS	8.045
INTERLIBRARY LOANS	5.391
HOLDINGS	1.133.832
NEW ACQUIRED BOOKS	18.875

¹⁶ At Austrian universities the number of studies does not correspond to the number of students enrolled. Students can be enrolled in different universities at the same time or in one university in different programs at the same time. That means that the total number of students per university is in fact smaller than the sum of students per program offered by one university. We therefore, had to apply the ratios of graduate and undergraduate studies to the number of fully enrolled students.

NUMBER OF JOURNAL SUBSCRIPTIONS	2.274
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Table 4: Average values of the Austrian average university/university library (input data)

4.2 Calculation of average values for output data

The calculation of output data has been done for three indicators: library visits, numbers of FTE and circulation.

According to Statistics Austria only 15 university libraries provided data for library visits. As we did not want to exclude the missing four libraries from our calculations, we had to impute data. For one library we took the value from library statistics 2006, for three other libraries (as no data were provided for 2006 either) we assumed that these libraries were approximately as often visited as all other Austrian university libraries and calculated an average value of library visits. We divided the totals of library visits (of 16 university libraries) by the totals of students from these universities. The result we got was the number of visits per student and year. This result was then multiplied by the number of students of the respective university, where data were missing.

The average output values for the Austrian average university library look as follows:

AUSTRIAN AVERAGE UNIVERSITY LIBRARY	STATISTICS AUSTRIA
LIBRARY VISITS	383.357
CIRCULATION	147.946
STAFFING	50,8

Table 5: Average values of the Austrian average university library (output data)

5 Differences between U.S. and Austrian libraries according to the LPM

5.1 General reasons for differences

Literature about comparisons of libraries between the United States and Europe can be found especially on the European side, probably because of the role model of Anglo-American libraries (Bertelsmann Stiftung 2004). However, going back about 150 years, the situation seemed to be different. An article published in the "Centralblatt für Bibliothekswesen" by Reyer in 1886 showed that the significance of libraries in the United States around 1850 was still very small, while European libraries had already holdings of some hundred thousand volumes.

Already forty years later, the situation had changed completely. American libraries had made enormous progress in the second half of the century and although they still possessed less volumes than European university libraries, in other areas, like opening hours, staffing, circulation etc. they at that time gained the good image they still have today.

Probably the most significant difference between the United States and Austria at that time was the political and educational systems in the 19th century. While Austria was a monarchy with more social class differences and a titled aristocracy, the United States are already a presidential republic with a comprehensive system of education. In Austria education was still seen as an elitist matter (Chaplan 1971).

If we move towards present time, we had identified as one of the major differences higher university and library budgets in the United States than in Austria. Almost all sources we found were relating to this fact. Especially the fund raising by the libraries themselves (Ber-

telsmann Stiftung 2004) is wide spread in the United States. However, since the financial situation of university libraries will not be discussed in this report, we will not go into further details.

5.2 LPM data versus Statistics Austria data

Apart from these general differences, we identified more concrete issues which are directly related to the LPM.

The first step of our analyses, the calculation of average values for library visits, library staff FTE and circulation according to Statistics Austria, was already described in section 4.

The second step is done in the LPM. After entering the input data (users, holdings and acquisitions) into the LPM, the tool provides estimates for library visits, circulation and staffing, which can then be compared with the values of the Austrian average university library (according to Statistics Austria). As a matter of fact, the results were quite different and therefore modifications of the LPM necessary.

5.2.1 LPM adaptations: number of library visits

“Unsere Bibliotheken standen in der alten Zeit oft nur an einigen Tagen der Woche und nur während weniger Stunden offen, sie wurden im Laufe des Jahres nur einige hundert, sicher selten über 1000 Stunden lang benutzt, ein Missverhältnis, welches sich in den letzten Decennien fast überall gebessert hat, indem die meisten europäischen Bibliotheken jetzt doch 2000 Nutztunden aufweisen; die amerikanischen Bibliotheken sind aber rascher vorgegangen, viele haben jährlich über 3000, ja 3600 Nutztunden, das Journalzimmer mancher Bibliothek hat sogar 4000 Nutztunden.“ (Reyer 1886)

The first indicator we calibrated was “library visits”. Entering the numbers of users (general and faculty staff; diploma and bachelor students as undergraduates (90% of total students) and master and doctorate students as graduates (10% of total students); number of interlibrary loans) in the original version of the LPM, we received the following results:

VISITS LPM	ACTUAL VISITS (library usage) STATISTICS AUSTRIA	Visits LPM/ Actual visits
575.354	383.357	1,50

Adaptation of visits: step 1

The LPM estimate for library visits was 50% too high. As already described in section four, a ratio of graduates to undergraduates of 27%:73% reflects much better the intensity of library usage by students. We therefore changed this ratio in the LPM and got as a result an even higher LPM estimate.

VISITS LPM	ACTUAL VISITS (library usage) STATISTICS AUSTRIA	Visits LPM/ Actual visits
603.449	383.357	1,57

Adaptation of visits: step 2

Considering this big difference, our first adaptation in the LPM was the reduction of uses per user (library visits) for primary users (faculty staff, undergraduate and graduate students). Because the LPM estimate was about 50% too high, we reduced the uses per user (library visits) by about one third. With this adaptation the number of visits decreased and we got quite close to the actual average number of library visits.

VISITS LPM	ACTUAL VISITS (library usage) STATISTICS AUSTRIA	Visits LPM/ Actual visits
406.384	383.357	1,06

Adaptation of visits: step 3

With the change of the ratio graduates to undergraduates and the reduction of uses per user (which correspond to library visits) we got a good result, which is very close to the actual number. Based on these changes, we came to the conclusion that American university libraries are visited more often than Austrian university libraries.

Our assumption is also supported by the comparison of American university libraries according to Carnegie categories (11-14) and 15 Austrian university libraries¹⁷. The ratio library visits per student based on Carnegie categories shows 87 visits per student and year, Austrian university libraries show 35 library visits per student and year.

We identified several reasons for these different frequencies of library visits. While university libraries in the United States are mostly organized centrally, Austrian university libraries have quite a distinct decentralized structure. Not all of these decentralized libraries have turnstile counts and sometimes do not even offer circulation.

The number of visits also greatly depends on the number of open days per year and the number of opening hours per day. According to the survey by Reichmann (2001) university libraries in English speaking countries offer more opening days per year than university libraries in German speaking countries. The ranking shows that Austrian university libraries open between 249 and 299 days per year, whereas the top ranked libraries in English speaking countries are opened up to 355 days per year. This big difference results also from the fact that in Austria only six out of 20 university libraries are opened on Saturdays and only two of these six offer access to reading areas also on Sundays. This situation also applies to weekly opening hours. According to the results by Reichmann, the top ranked libraries in English speaking countries are opened up to 140 and more hours per week, whereas only two Austrian libraries open about 100 hours (access to reading areas), one library opens about 85 and one about 70 hours per week.

5.2.2 LPM adaptations: circulation (number of loans)

„Ferner ist die Zahl der Benutzungen in den meisten amerikanischen Instituten viel bedeutender als bei uns. Während die alten Bibliotheken Europas auf einen Buchvorrath von 100 Vol. jährlich meist nur 5 bis 50 Benutzungen aufweisen, kommen in den freien Bibliotheken Amerikas (und Englands) auf 100 Bände jährlich mehrere 100 ja nahezu 1000 Benutzungen.“
(Reyer 1886)

After having adapted the library visits-indicator, we moved on to the second indicator, circulation, which of course depends on the number of library visits. We followed the same procedure as we did with library visits. We first inserted the number library users (diploma and bachelor students as undergraduates, master and doctorate students as graduates) in the original version of the LPM.

¹⁷ Universities in the United States and Austria differ in terms of budget, structure and size. This comparison is certainly problematic, but nevertheless it shows a general tendency.

LOANS LPM	ACTUAL LOANS STATISTICS AUSTRIA	Loans LPM/ Actual Loans
114.910	147.946	0,78

Adaptation of circulation: step 1

The LPM estimate was surprisingly low in comparison to the actual average value from Statistics Austria. After having changed the ratio of undergraduates to graduates (according to the assumptions laid out above), we again got very close to the average values by Statistics Austria.

LOANS LPM	ACTUAL LOANS STATISTICS AUSTRIA	Loans LPM/ Actual Loans
138.510	147.946	0,94

Adaptation of circulation: step 2

The next step of calibration was the reduction of uses per user as already described in the previous section (section 5.2.1) for about one third. This adaptation resulted in a dropdown of circulation.

LOANS LPM	ACTUAL LOANS STATISTICS AUSTRIA	Loans LPM/ Actual Loans
93.994	147.946	0,64

Adaptation of circulation: step 3

The LPM estimate for circulation went down to 64% of actual loans according to Statistics Austria.

In this context an important fact has to be considered. Austrian university libraries have about 50% of their holdings in closed stack collections. While in the main libraries (with a long historic tradition) the share of closed stack collections is quite high, books in decentralized institutions are accessible in open stack collections. According to several annual reports and discussions the share of loans from closed stack collections is between 50% and 60%.

In the United States however university libraries have been pursuing an open stack concept. According to the original "American" LPM about two third of the books are consulted within the library and only one third is taken on loan. This ratio is probably different in Austria, as users have to check out a book from closed stacks in order to be able to browse through it. We therefore increased the percentage of circulate use from 33% to 50% for faculty staff and graduate students and from 16% to 25% for undergraduate students.

CIRCULATION LPM	ACTUAL CIRCULATION STATISTICS AUSTRIA	Circulation LPM/ Actual Circulation
141.688	147.946	0,96

Adaptation of circulation: step 4

The result of the last adaptation was again a very close match. It means that Austrian students borrow more books in relation to library visits than American students do.

Summarizing our steps of adaptations concerning circulation, we first reduced the number of library visits (uses per user) for about one third, and then we increased the number of circulations (which of course depend on the number of library visits) for the main user groups for 50%. Comparing LPM estimates of these adaptations in step 2 (original version after the change of student ratios) and step 4 (calibrated version) we can see that the LPM estimates

do not differ a lot. That means that circulation in U.S. university libraries are quite similar to those in Austrian university libraries in spite of quite different numbers of library visits.

This high number of loans is also supported by the results of the survey conducted by Reichmann (2001)¹⁸, who did not find significant differences concerning circulation between university libraries in German and English speaking countries.

5.2.3 LPM adaptation: staffing

„Unsere meisten grossen Institute haben nur 2 bis 3 Bedienstete, während die Astor Library (New-York) und das British Museum auf die gleiche Anzahl Bände 10 Bedienstete aufweisen und Boston diese Zahl noch um das dreifache übertrifft ... Unsere Bediensteten haben vollauf zu thun, die Bibliothek in Ordnung zu halten und können beim besten Willen nicht überdies noch eine entsprechende Benutzung der Bibliotheken erzielen.“
(Reyer 1886)

The calibration of staffing followed the same procedure as the calibration of library visits and circulation. The first step was the insertion of original user data into the LPM (ratio undergraduates to graduates 9:1). As a result the LPM estimate was about 20% higher than the actual staffing of Austrian university libraries.

STAFFING LPM	ACTUAL STAFFING STATISTICS AUSTRIA	Staffing LPM/ Actual Staffing
61,70	50,8	1,21

Adaptation of staffing: step 1

After changing in the LPM the ratios of graduate to undergraduates to 27%:73%, the LPM estimate increased again by 10%.

STAFFING LPM	ACTUAL STAFFING STATISTICS AUSTRIA	Staffing LPM/ Actual Staffing
66,68	50,8	1,31

Adaptation of staffing: step 2

After the reduction of uses per user (library visits, see section 5.2.1) by about 33% for primary library users, the calculated ratio showed already an estimate close to the actual staffing of Austrian university libraries.

STAFFING LPM	ACTUAL STAFFING STATISTICS AUSTRIA	Staffing LPM/ Actual Staffing
54,41	50,8	1,07

Adaptation of staffing: step 3

¹⁸ Reichmann (2001) conducted a comparison of performance measurement factors in 132 university libraries in Austria, Germany, Switzerland, USA, Australia and Canada.

The increase of circulation use described in section 5.2.2 raised again the LPM estimate for staffing.

STAFFING LPM	ACTUAL STAFFING STATISTICS AUSTRIA	Staffing LPM/ Actual Staffing
56,24	50,8	1,11

Adaptation of staffing: step 4

So far we changed the ratio of graduate to undergraduate students, reduced the number of uses per user and increased the circulation use. With all these changes accomplished the LPM estimate for staffing was about 11% higher than the actual staffing at the so called Austrian average university library.

The calibration of staffing was the most critical part, as no statistical data were available on staffing structures. We therefore analyzed organization charts of different university libraries and compared the results with the LPM estimates for staffing. The estimates for technical services staff provided by the LPM were quite close to the results of our analyses of organization charts.

In spite of these close matches we made two changes, which were related to selection of media and collection development. In the American version of the LPM the ratio of originated orders to standing orders was 50:50. In Austria university libraries have (according to different discussions) only a small number of standing orders. We therefore changed the ratio to 80:20 (originated to standing orders).

A second change was made in the context of collection development. The total time needed for the process of selecting one book (including the whole evaluation process) was reduced from 100 to 30 minutes. Of course, the time needed for the selection of a single book also depends on the budget. The lower the budget, the longer the selection process takes, because the identification of the media to be purchased needs to be done much more carefully.

STAFFING LPM	ACTUAL STAFFING STATISTICS AUSTRIA	Staffing LPM/ Actual Staffing
51,28	50,8	1,01

Adaptation of staffing: step 5

The goal of our adaptation of the LPM was to get estimates within a 10% range. With the LPM estimate for staffing in step 5 we got reached this goal. We stopped our calibration process at that point, as no data for further meaningful calibrations were available.

The high LPM estimate for staffing reflects the general impression that American libraries are better staffed than Austrian.

This fact that libraries in English speaking countries are significantly better staffed than in German speaking countries is also supported by the survey conducted by Reichmann (2001). A comparison of ratios "library staff per student" between university libraries in U.S.¹⁹

¹⁹ Comparison of library FTE data from Carnegie categories 11, 12, 13, 14

and in Austria²⁰ shows 0.01 library staff (FTE) per student in American university libraries, whereas in Austria the ratio is about 0.005 library staff (FTE) per student, which corresponds to one half of the staff in American libraries. Considering this ratio²¹, the difference provided in this example is probably too big, but the tendency itself seems to be correct.

6 Data uncertainties and limitations

The quality of data seems to be a problematic issue in general. According to an international survey, librarians in managing positions from the United States, Great Britain, Germany, Switzerland and Austria indicated that they are not satisfied with the performance measurement by official statistics (Hermelbracht et al, 2006).

In the following we will briefly discuss several data uncertainties, which we discovered in our analyses.

6.1 Faculty staff and student data

The data concerning faculty staff and students seem to be reliable. They are derived from the data warehouse of the federal ministry for science and research. Nevertheless, there are some uncertainties, which we would like to point out.

Faculty staff²²

The number of faculty staff we are dealing with in the LPM relates only to fully employed scientific and artistic university staff. External lecturers, who are employed part-time or only for the period of teaching, are not included.

Students

In Austria students can be enrolled at different universities at the same time or at one university in different programs at the same time. Therefore, the total number of students per university is in fact smaller than the sum of students per program offered by one university.

A second issue concerning students is the ratio between undergraduates and graduates. Austria currently is in the phase of transition from former "diploma studies" to the new system of "bachelor" and "master studies". While the "old" diploma studies are discontinued, not all universities have introduced the new three cycle system (bachelor/master/doctorate) yet. In 2005, 17 universities (out of 21) offered bachelor programs, and 16 universities (out of 21) master programs. In that particular year the share of graduates amounted to about 8-10%, counting the diploma and bachelor students as undergraduates and the master and the doctoral students as graduates. However, to count diploma students as undergraduates is not totally correct. It can be assumed that diploma students use the library during the phase of writing the thesis as intensively as master students do.

²⁰ 19 Austrian university libraries were analyzed

²¹ Universities in the United States and Austria differ in terms of budget, structure and size. A comparison is certainly problematic, but nevertheless a general tendency is visible.

²² Faculty staff includes university professors, habilitated scientific and artistic staff in research, art and teaching and not habilitated scientific and artistic staff in research art and teaching.

6.2 Library data

The main problems with library data were due to incomplete (official) library statistics.

Statistics Austria conducts a nationwide annual library survey. As the participation in this survey is not obligatory, not all university libraries provide data and even those which provide data do not or cannot answer all questions and therefore did not provide a complete set of data.

The biggest problem came up with library visits. Library visits according to Statistics Austria do not totally correspond to turnstile counts in the LPM, but are related to some kind of library usage. Therefore, the number of library visits according to Statistics Austria is supposed to be smaller than the number of turnstile counts. A comparison with the library visits provided by five Austrian university libraries to the "Bibliotheksindex (BIX)" (which are related to turnstile counts) in 2005, shows that in three cases the numbers were identical, in one case the number of visits according to the BIX table was slightly higher than the number indicated in the Statistics Austria table and in the other case the number of visits according to the BIX table was nearly three times the number of visits indicated in the Statistics Austria table.

A comparison of BIX data and Statistics Austria data for 2006 showed similar results. Here we had data sets for nine libraries. In six cases the numbers were identical, in one case the numbers according to the BIX table were slightly higher and in one case slightly lower than the Statistics Austria data. Like in 2005 in one case the numbers for library visits indicated in the BIX table was nearly three times the number indicated in the Statistics Austria table. This means that the library visits for one library should definitely be much higher. For the remaining ten university libraries, which did not participate in the Bibliotheksindex, we had no data to compare and therefore did not know how accurate the Statistics Austria data were.

A second reason for uncertainties concerning library visits is the structure of Austrian university libraries. As already mentioned before, Austrian university libraries are organized in a more decentralized way. Only five university libraries (25%) out of 20 consist of a single central library without any sub-libraries. The other 15 university libraries (75%) have either faculty, departmental or interdepartmental libraries. According to their web pages we identified 11 faculty libraries, some interdepartmental libraries and more than hundred departmental libraries, which in many cases are staffed by the department and not by the library.

Not all decentralized libraries have turnstile counts and therefore cannot provide a complete set of data. Because of this fact some libraries indicated library visits only for the main library.

7 Summary

„Natürlich wird eine Fachbibliothek immer verhältnismässig schwach besucht sein und eine Benutzung wird demgemäss theurer zu stehen kommen; einige unserer grossen europäischen Institute sollten aber ihr Material sicherlich besser verwerten. Vermehrung der Lesezimmer, bedeutende Vermehrung des Beamtenkörpers und der Dienerschaft und entsprechende Erhöhung der Dotation sind zeitgemässe Forderungen.“
(Reyer 1886)

The LPM had to be adapted to the Austrian situation, based on input data such as users, holdings and acquisitions from different data sources and on output data such as circulation, staffing and library visits.

The most important issue when doing these adaptations was the ratio of graduates to undergraduates. In fact, only the right distribution made an effective comparison of libraries possible. This ratio was important throughout our analyses and influenced all indicators.

AUSTRIAN AVERAGE UNIVERSITY LIBRARY	LPM	STATISTICS AUSTRIA	LPM/Stat. Austria
LIBRARY VISITS	406.384	383.357	1,06
CIRCULATION	141.688	147.946	0,96
STAFFING	51,28	50,8	1,01

Table 6: Comparison of adapted indicators (output data)

To summarize the results according to the LPM, the Austrian average university library has about 406.300 library visits and about 142.700 loans annually and is staffed with approximately 54 library staff FTE.

Considering the adaptations accomplished, Austrian university libraries have about one third less visits than American university libraries. In spite of this fact, circulation, which is of course directly related to library visits, seems to be higher in relation to library visits in Austria than in the U.S. The ratio of circulation to library visits according to LPM is about 35% in Austrian university libraries. Considering the actual Statistics Austria numbers of visits and loans, this ratio is even higher, about 39%, whereas this ratio in the United States for Carnegie categories 11-14 is about 23%²³.

This higher ratio in Austrian libraries could be due to the fact that about 50% of holdings in Austrian university libraries are kept in closed stack collections and therefore need to be checked out in order to consult them.

The calibration of staffing was mainly based on adaptations of reader services staff. The fact that the staffing of the reader services area needed more modifications than the technical services area lead us to the conclusion that Austrian university libraries are traditionally more focused on media acquisition and preservation than on the reader services area. It could also mean that this area is not as well staffed as in the United States. It is difficult to say if there is a direct relation between the staffing of the reader services area and the number of library visits, which are significantly higher in the United States.

8 Outlook

The Library Planning Model has been developed at a time when electronic resources were of minor importance. In the current version of the LPM, they are not considered separately as workload factor, but are generally included. As the significance of electronic resources has been steadily increasing, we decided to expand the functionality of the LPM and to include electronic resources as a separate work load factor.

Currently we are conducting a survey to determine the workload for electronic resources. One of the basic assumptions of this survey is that the workload factors for electronic re-

²³ Ratio Circulation to Gate Count per Year according to data from Carnegie categories 11, 12, 13, 14 (2004)

sources do not only depend on their numbers but also on the numbers of contracts, which have to be negotiated in order to get access to an electronic resource. It is expected that the number of contracts will provide an additional basis for the calculation of workloads. The first results of this survey will be available this July.

After finishing all adaptations to the Austrian LPM according to the differences between the two countries we identified, we get as a result the staffing of the Austrian average university library divided into two groups: staffing needed for serving library users and staffing needed for processing media. Both results will be used for further analyses in our project and are essential links to determine the information management functions in industries.

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10 Appendix A – Statistical data

Overview of data and sources used (1)

Institution	Students (1)	Graduates (2)	Undergraduates (3)
University Vienna	64125	17314	46811
University Graz	19853	5360	14493
University Innsbruck + Innsbruck University of Medicine	23316	6295	17021
Vienna University of Medicine	10024	2706	7318
University Salzburg	10838	2926	7912
Vienna University of Technology	16536	4465	12071
Graz University of Technology	8777	2370	6407
University of Mining Leoben	2009	542	1467
University of Natural Resources and Applied Life Sciences, Vienna	5438	1468	3970
University of Veterinary Medicine Vienna	2228	602	1626
Vienna University of Economics and Business Administration	20127	5434	14693
University of Linz	11686	3155	8531
University of Klagenfurt	6316	1705	4611
University of Applied Arts Vienna	1348	364	984
University of Music and Performing Arts Vienna	2394	646	1748
University of Music and Dramatic Arts "Mozarteum" Salzburg	1296	350	946
University of Music and Dramatic Arts Graz	1264	341	923
University of Art and Industrial Design Linz	878	237	641
Academy of Fine Arts Vienna	935	252	683
Total	209388	56535	152853
Austrian average university	11020	2976	8045

(1) Source: Data warehouse of the federal ministry for science and research, Winter Semester 2005/06 (28.02.2006); http://eportal.bmbwk.gv.at/portal/page?_pageid=93,140222&_dad=portal&_schema=PORTAL

(2) Comment: See section 4.1 Calculation of average values for input data

(3) Comment: See section 4.1 Calculation of average values for input data

Table 7: Student data used for analyses

Overview of data and sources used (2)

Institution	Academic staff (4)	Administrative staff (5)	Library staff (6)
University Vienna	1733,6	1532,6	266,6
University Graz	639,7	731,5	116,0
University Innsbruck + Innsbruck University of Medicine	1367,6	1249,8	128,6
Vienna University of Medicine	1459,7	1965,6	26,1
University Salzburg	538,6	484,8	96,0
Vienna University of Technology	879,1	812,7	52,0
Graz University of Technology	612,7	587,4	37,5
University of Mining Leoben	165,6	213,2	13,8
University of Natural Resources and Applied Life Sciences, Vienna	346,3	423,5	24,0
University of Veterinary Medicine Vienna	235,4	428,0	14,0
Vienna University of Economics and Business Administration	434,4	408,1	45,0
University of Linz	802,6	513,2	45,0
University of Klagenfurt	268,4	276,9	40,0
University of Applied Arts Vienna	156,8	112,4	9,0
University of Music and Performing Arts Vienna	445,3	258,4	12,0
University of Music and Dramatic Arts "Mozarteum" Salzburg	220,4	113,4	12,0
University of Music and Dramatic Arts Graz	232,9	121,6	11,0
University of Art and Industrial Design Linz	66,6	74,0	6,0
Academy of Fine Arts Vienna	87,3	123,0	10,5
Total	10692,9	10430,0	965,1
Austrian average university	562,8	548,9	50,8

- (4) Source: Data warehouse of the Federal ministry for science and research;
http://eportal.bmbwk.gv.at/portal/page?_pageid=93,140222&_dad=portal&_schema=PORTAL
- (5) Source: Data warehouse of the Federal ministry for science and research;
http://eportal.bmbwk.gv.at/portal/page?_pageid=93,140222&_dad=portal&_schema=PORTAL
- (6) Source: Statistics Austria; Bibliotheksstatistik 2005;
http://www.statistik.at/web_de/statistiken/bildung_und_kultur/kultur/bibliotheken/index.html

Table 8: University and library staff

Overview of data and sources used (3)

Institution	holdings (7)		print journals (9)	new media (10)	
University Vienna	6.495.871		11.536	106.684	
University Graz	3.000.000		4.000	34.000	
University Innsbruck + Innsbruck University of Medicine	3.247.315		7.440	45.456	
Vienna University of Medicine	777.152		1.797	10.075	
University Salzburg	2.199.240	(8)	4.571	34.179	(11)
Vienna University of Technology	1.263.526		1.771	19.133	
Graz University of Technology	618.684		1.217	13.812	
University of Mining Leoben	265.912		665	2.125	
University of Natural Resources and Applied Life Sciences, Vienna	522.328		1.486	9.597	
University of Veterinary Medicine Vienna	196.160		803	3.520	
Vienna University of Economics and Business Administration	784.610		2.200	18.400	
University of Linz	900.000		1.784	25.000	
University of Klagenfurt	744.185		2.538	14.480	
University of Applied Arts Vienna	110.956		382	4.034	
University of Music and Performing Arts Vienna	72.682		213	4.978	
University of Music and Dramatic Arts "Mozarteum" Salzburg	84.724		279	3.776	
University of Music and Dramatic Arts Graz	65.185		235	5.170	
University of Art and Industrial Design Linz	58.308		170	1.693	
Academy of Fine Arts Vienna	135.970		120	2.506	
Total	21.542.808		43.207	358.618	
Austrian average university	1.133.832		2.274	18.875	

(7) Source: Statistics Austria; Bibliotheksstatistik 2005;
http://www.statistik.at/web_de/statistiken/bildung_und_kultur/kultur/bibliotheken/index.html

(8) Comment: includes also other library media

(9) Source: Statistics Austria; Bibliotheksstatistik 2005;
http://www.statistik.at/web_de/statistiken/bildung_und_kultur/kultur/bibliotheken/index.html

(10) Source: Statistics Austria; Bibliotheksstatistik 2005;
http://www.statistik.at/web_de/statistiken/bildung_und_kultur/kultur/bibliotheken/index.html

(11) Comment: includes also other library media

Table 9: Number of holdings, print journals and new acquired media

Overview of data and sources used in our analyses (4)

Institution	circulation (12)	interlibrary loan (13)	library visits (14)	
University Vienna	988.873	34.154	2.412.701	
University Graz	250.787	4.191	684.783	(15)
University Innsbruck + Innsbruck University of Medicine	375.444	5.144	758.887	
Vienna University of Medicine	97.221	29.564	432.222	
University Salzburg	266.246	7.720	481.671	
Vienna University of Technology	114.323	1.978	389.003	
Graz University of Technology	64.912	476	132.491	(16)
University of Mining Leoben	14.788	482	44.090	
University of Natural Resources and Applied Life Sciences, Vienna	56.911	852	209.501	
University of Veterinary Medicine Vienna	34.355	973	64.820	
Vienna University of Economics and Business Administration	207.081	4.864	902.685	(17)
University of Linz	97.020	1.899	246.810	(18)
University of Klagenfurt	99.612	3.459	189.716	
University of Applied Arts Vienna	28.563	317	86.472	
University of Music and Performing Arts Vienna	28.576	199	83.278	(19)
University of Music and Dramatic Arts "Mozarteum" Salzburg	37.000	400	45.083	(20)
University of Music and Dramatic Arts Graz	23.477	12	73.520	
University of Art and Industrial Design Linz	17.329	-	30.542	(21)
Academy of Fine Arts Vienna	8.454	355	15.500	
Total	2.810.972	97.039	7.283.775	
Austrian average university	147.946	5.391	383.357	

(12) Comment: Circulation (without extensions) including active interlibrary loans; Source: Statistics Austria; Bibliotheksstatistik 2005; http://www.statistik.at/web_de/statistiken/bildung_und_kultur/kultur/bibliotheken/index.html

(13) Comment: interlibrary loan passive orders; Source: Statistics Austria; Bibliotheksstatistik 2005; http://www.statistik.at/web_de/statistiken/bildung_und_kultur/kultur/bibliotheken/index.html

(14) Comment: in connection to some kind of library usage; Source: Statistics Austria; Bibliotheksstatistik 2005; http://www.statistik.at/web_de/statistiken/bildung_und_kultur/kultur/bibliotheken/index.html

(15) Comment: value from 2006, as no data from 2005 were available

(16) Comment: data from main library only

(17) Comment: only until 31.12.2005 (fire)

(18) Comment: data from main library only

(19) Comment: calculated average value, for details see section 4, Calculation of average values according to Statistics Austria data

(20) Comment: calculated average value, for details see section 4, Calculation of average values according to

Statistics Austria data

- (21) Comment: calculated average value, for details see section 4, Calculation of average values according to Statistics Austria data

Table 10: Circulation, interlibrary loans and library visits

11 Appendix B – LPM Parameters

Overview of LPM parameters (1)

Data Entry >>	Users Data >>	Client Workloads	
USAGE BY POPULATION TYPES	USER %	USES/USER	
Staff	25%	50	
Faculty	100%	(90)	60 *
Graduate Students	100%	(60)	40 *
Under-Graduate Students	100%	(45)	30 *
Institutions (ILL Lending)	100%	1	

Data Entry >>	Users Data >>	Distribution over Services			
REFERENCE USE BY POPULATION TYPES	REFERENCE	DATABASE ACCESS	ILL BORROW	CONSULT/ INSTRUCT	
	Regular	Extended			
Staff	5,00%	1,00%	0,20%	5,00%	0,20%
Faculty	5,00%	1,00%	0,20%	5,00%	0,20%
Graduate Students	5,00%	1,00%	0,10%	2,50%	0,20%
Under-Graduate Students	5,00%	1,00%	0,10%		0,20%
Institutions (ILL Lending)	100,00%				

Data Entry >>	Users Data >>	Distribution over Use of Materials			
MATERIALS USE BY POPULATION TYPES	CIRCULATE USE	INHOUSE USE	RESERVE USE	PHOTOCOPY USE	AV,MULTI MEDIA
Staff	33,00%	67,00%		0,10%	0,10%
Faculty	(33%) 50% *	(67%) 33% *		0,10%	0,10%
Graduate Students	(33%) 50% *	(67%) 33% *		0,00%	0,50%
Under-Graduate Students	(16%) 25% *	33,00%	7,00%	0,00%	1,50%
Institutions (ILL Lending)	50,00%			50,00%	

* value within brackets = original LPM value; value outside brackets = Austrian adapted value

Table 11: LPM parameters – users data

Overview of LPM parameters (2)

Data entry >>		Materials data >>		Acquisition means		
ACQUISITION OF MATERIALS	UNITS OF MEASURE	MATERIALS Originated	ORDERING Standing	ACQUIRE	SERIALS	RECEIVE HANDLE
Monographs	Volumes	(50%) 80% *	(50%) 20% *	100%		100%
Monographic Series	Volumes				100%	100%
Periodicals	Vols/Titles				100%	100%

Data entry >>		Materials data >>		Cataloging	
CATALOGING OF MATERIALS	DESCRIPTIVE Original	CATALOG Copy	SUBJECT Original	CATALOG Copy	AUTHORITY FILES
Monographs	7%	93%	7%	93%	5%
Monographic Series		100%		100%	5%
Periodicals					5%

Data entry >>		Materials data >>		Conservation/Holdings		
CONSERVATION OF HOLDINGS	BINDING PREPARE	CONSERVE Repair	CONSERVE Full	REPRODUCE CONTENT	CONSERVE HANDLE	BINDING
Monographs			0,01%			
Monographic Series						
Periodicals						

* value within brackets = original LPM value; value outside brackets = Austrian adapted value

Table 12: LPM parameters – materials data

Overview of LPM parameters (3)

Modify >>	Workload Factors >>	Services		
SERVICES		WORKLOAD FACTORS		
		Intellectual	Procedural	Physical
Circulation Use			3	2
In-House Use				2
Reserve Use				5
Photocopy Use				1
Multi-Media Use				5
Reference, General		10	10	
Reference Extended		50		
Database Access		50		
AccessElsewhere (ILL)		20	20	10
Analyze, Consult, Instruct		60		

Modify >>	Workload Factors >>	Acquisitions		
ACQUISITION PROCESSES		WORKLOAD FACTORS		
		Intellectual	Procedural	Physical
Develop Collections		(100) 30 *	2	
Approval Plan, Deposit		10	2	
Gifts & Exchange			2	
Acquire (Order, Invoice)			40	
Process Serials			10	10
Acquisition Handling				2

Modify >>	Workload Factors >>	Cataloging		
CATALOGING PROCESSES		WORKLOAD FACTORS		
		Intellectual	Procedural	Physical
Descriptive: Original		80		
Descriptive: Copy			20	
Subject: Original		80		
Subject: Copy			20	
Authority Files			25	
Retro Conversion			40	
Catalog Handling			2	3

Modify >>	Workload Factors >>	Conservation		
CONSERVATION PROCESSES		WORKLOAD FACTORS		
		Intellectual	Procedural	Physical
Binding Preparation			10	6
Minor Repairs			15	
Full Conservation		250	250	
Reproduce (Micro, Photo, Digital)				
Conservation Handling			2	2
Binding				30

* value within brackets = original LPM value; value outside brackets = Austrian adapted value

Table 13: LPM parameters – workload factors

12 Appendix C – LPM Calculations

LPM Calculation: Reader Services Staff 1

Total uses per user group		Circulation use per user group (%)		In-house use per user group (%)		Reserve use per user group (%)		Photocopy use per user group (%)		AV, Multi media use per user group (%)
Admin staff	*	Admin staff		Admin staff		Admin staff		Admin staff		Admin staff
Faculty staff	*	Faculty staff		Faculty staff		Faculty staff		Faculty staff		Faculty staff
Graduate students	*	Graduate students		Graduate students		Graduate students		Graduate students		Graduate students
Undergraduate students	*	Undergraduate students		Undergraduate students		Undergraduate students		Undergraduate students		Undergraduate students
Interlibrary loans	*	Interlibrary loans		Interlibrary loans		Interlibrary loans		Interlibrary loans		Interlibrary loans
					
				Workload factors (minutes)		Esitmed workloads (volumes)				
				Circulation use	*	Circulation use	} /	minutes per working year for one FTE (Procedural & Physical functions like Intellectual functions)		
				In-House use	*	In-House use				
				Reserve use	*	Reserve use				
				Photocopy use	*	Photocopy use				
				Multi-Media use	*	Multi-Media use				
				Intellectual functions (number of staff FTE)	+	Procedural functions (number of staff FTE)	+	Physical functions (number of staff FTE)		
								Circulation direct time FTE	+	Reference direct time FTE
								Reader Services Staff FTE		

Table 14: LPM calculation – reader services staff – circulation

LPM Calculation: Reader Services Staff 2

Total uses (library visits) per user group		Reference use: regular (%)		Reference use: extended (%)		Reference use: Database access (%)		Reference use: ILL borrow (%)		Reference use: Consult/Instruct (%)
(Admin) staff	*	(Admin) staff		(Admin) staff		(Admin) staff		(Admin) staff		(Admin) staff
Faculty staff	*	Faculty staff		Faculty staff		Faculty staff		Faculty staff		Faculty staff
Graduate students	*	Graduate students		Graduate students		Graduate students		Graduate students		Graduate students
Undergraduate students	*	Undergraduate students		Undergraduate students		Undergraduate students		Undergraduate students		Undergraduate students
Institutions (ILL Lending)	*	Institutions (ILL Lending)		Institutions (ILL Lending)		Institutions (ILL Lending)		Institutions (ILL Lending)		Institutions (ILL Lending)
					
				Estimated Workloads		Workload Factors (minutes)				
				Reference, General	*	Reference, General				
				Reference Extended	*	Reference Extended		minutes per working year		
				Database Access	*	Database Access		/ for one FTE		
				AccessElsewhere (ILL)	*	AccessElsewhere (ILL)		(Procedural & Physical functions		
				Analyze, Consult, Instruct	*	Analyze, Consult, Instruct		like Intellectual functions)		
						Intellectual functions		Procedural functions		Physical functions
						(number of staff FTE)	+	(number of staff FTE)	+	(number of staff FTE)
				Circulation direct time FTE	+	Reference direct time FTE				
						Reader Services Staff FTE				

Table 15: LPM calculation – reader services staff – reference

LPM Calculation: Technical Services Staff 1

Acquisition of materials: Annual additions (volumes)	Materials ordering: originated orders (%)	Materials ordering: standing orders (%)	Gifts and exchanges (%)	Acquire (%)	Serials (%)	Receive/Handle (%)
Monographs	* Monographs	Monographs	Monographs	Monographs	Monographs	Monographs
Monographic Series	* Monographic Series	Monographic Series	Monographic Series	Monographic Series	Monographic Series	Monographic Series
Periodicals	* Periodicals	Periodicals	Periodicals	Periodicals	Periodicals	Periodicals
		
	Acquisition processes: estimated workloads	Acquisition processes: workload factors (minutes)				
	Develop Collections	Develop Collections				
	Approval Plan, Deposit	Approval Plan, Deposit				
	Gifts & Exchange	Gifts & Exchange	minutes per working year			
	Acquire (Order, Invoice)	Acquire (Order, Invoice)	/ for one FTE			
	Process Serials	Process Serials	(Procedural & Physical functions			
	Acquisition Handling	Acquisition Handling	like Intellectual functions)			
	Intellectual functions (number of staff FTE)	Procedural functions (number of staff FTE)	Physical functions (number of staff FTE)			
	Acquisition direct time FTE	Cataloging direct time FTE	(Conservation) direct time FTE	(Publishing) direct time FTE		
			Technical Services Staff FTE			

Table 16: LPM calculation – technical services staff – acquisition

LPM Calculation: Technical Services Staff 2

Descriptive cataloging (volumes)	Cataloging of materials: Descriptive: original (%)	Cataloging of materials: Descriptive: copy (%)	Subject cataloging (volumes)	Cataloging of materials: Subject: original (%)	Cataloging of materials: Subject: copy (%)
Monographs	Monographs	Monographs	Monographs	Monographs	Monographs
Monographic Series	Monographic Series	Monographic Series	Monographic Series	Monographic Series	Monographic Series
Periodicals	Periodicals	Periodicals	Periodicals	Periodicals	Periodicals
<hr/>					
	Cataloging processes - estimated workloads	Cataloging processes - workload factors (minutes)			
	Descriptive: Original	Descriptive: Original			
	Descriptive: Copy *	Descriptive: Copy *			
	Subject: Original *	Subject: Original *			
	Subject: Copy *	Subject: Copy *	minutes per working year		
	Authority Files *	Authority Files *	for one FTE		
	Retro Conversion *	Retro Conversion *	(Procedural & Physical functions		
	Catalog Handling *	Catalog Handling *	like Intellectual functions)		
	Intellectual functions (number of staff FTE)	Procedural functions (number of staff FTE)	Physical functions (number of staff FTE)		
		+	+		
	Acquisition direct time FTE	Cataloging direct time FTE	(Conservation) direct time FTE	(Publishing) direct time FTE	
		+	+		
			Technical Services Staff FTE		

Table 17: LPM calculation – technical services staff – cataloging (main calculations)