

# The problem of measuring e-resources<sup>1</sup>

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## Abstract:

Our contribution will report on an exploratory study the main goal of which was to find out the factors which influence the staffing requirements for the management of e-resources in libraries. The survey was conducted in spring 2008. The responses of 12 Austrian libraries, among them 9 university libraries, were analyzed.

In order to guarantee a correct analysis especially with regards to staffing requirements for e-resources, the following distinctions were made:

- e-resources were divided into e-journals, e-books and databases
- tasks were related to either the acquisition process or the making available of e-resources
- data were collected for both the number of negotiated contracts (with the publishers) and the number of “available” e-resources
- consortium contracts were distinguished from contracts negotiated by the particular library.

The results of our study identified various problems related to e-resources. They are:

- the difficulty to draw a boundary between contracts and single e-journal orders
- the problem to determine the number of e-journal and e-book “holdings” of a library.

The study concludes that it is hardly possible to find a clear relation between the number of staff in charge of e-resources and the other variables. To some extent, the size of a library (number of total staff) can be used to get a rough estimate for the staffing requirements. However, a high relation could be identified between the total number of e-journal contracts and the number of personnel which is in charge of the acquisition of e-journals.

Keywords: library, exploratory study, staffing, e-resources, e-journals, e-books, databases

## 1 Introduction

E-resources, like e-journals or e-books, do not only differ with regard to their physical composition, also their “handling” or administration is quite different from print media. Libraries have a long experience in the technical processing of print media, workflows are efficient and well defined and workloads are measurable based on the type of work and the number of media. In contrast, e-resources have not reached a comparable status yet. E-resources are still at a young age, their integration into the library processes differs from library to library

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and the variety of workflows seems to underline this heterogeneity. This makes it extremely difficult for libraries to identify the workload caused by e-resources. This lack of measuring workloads is exactly what this paper deals with: How do e-resources influence the staffing requirements in libraries? Trying to answer this question our paper aims at identifying those characteristics of e-resources, which are directly related to measurable workloads and finally to staffing.

## 2 Survey: sample and structure of questionnaire

The study was conducted in spring 2008, the collected data relate to 2007. We analyzed 12 responses, 9 from Austrian university libraries and 4 from other institutional libraries. Though our sample is fairly small, its heterogeneity is quite remarkable. In fact, we compare small institutions with about ten library employees and 2000 students with much bigger units with more than 100 library employees and more than 20000 students. In order to get reasonable results we split the libraries into two groups based on number of students, faculty staff, library staff, number of staff dealing with e-resources and total number of contracts. The original analysis was performed for both groups, group 1 containing eight and group 2 only four libraries. In this paper we focus on group 1 libraries, since these results are more meaningful and representative.

The questions of the survey were basically related to the following topics: e-resources, contracts, tasks and internal organization, and staffing.

### E-resources

We distinguished between the following three types of electronic resources: e-journals, e-books and databases. Though these electronic resources are different with regard to usage, they are comparable in the way they are managed. Questions relate to the number of these three types of resources. Furthermore we investigated the “tools” which are used for the administration of e-resources. Unlike traditional print material, e-resources are usually managed in more than one (library) management system. In general, libraries in Austria use the “Elektronische Zeitschriftenbibliothek” (EZB)<sup>2</sup> (Electronic journals library) for this purpose, the library catalog and/or some kind of linking tool.

### Contracts

The questions with regard to contracts dealt primarily with the number of contracts and the expenditures for these contracts. As the time exposure varies considerably depending on who does the contracting, the library itself or a consortium, we made a distinction between two types of contracts: contracts negotiated by a library and contracts negotiated by a consortium. Talking about consortiums in this context means one Austrian consortium called “E-Medien”<sup>3</sup>, which is a nationwide consortium where nearly all university libraries, but also other institutional libraries, participate.

### Tasks and internal organization

As mentioned above, we distinguished between the following two task groups when dealing with e-resources: acquisition and making them available. Acquisition in this context means to solicit bids, to test and to evaluate resources, to make price comparisons and to conduct licensing negotiations. Making e-resources available covers all ongoing routine work, in the majority of all cases by means of at least one “tool”, in order to guarantee an up to date ac-

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<sup>2</sup> Electronic journals library:

<http://rzblx1.uni-regensburg.de/ezeit/index.phtml?bibid=AAAAA&colors=7&lang=en>

<sup>3</sup> Kooperation E-Medien Österreich: <http://www.konsortien.at>

cess to the e-resources. Finally we calculated the ratio between the two basic task groups: acquisition and making available.

As already mentioned in the previous chapter, the institutions analyzed in this paper are quite heterogeneous and so is the way, how the processes of acquisition and making them available are integrated in library workflows. One possible option is that all these tasks are performed in an own department, the other option offered is a cross-departmental organization of tasks.

### 3 Results

All calculations, which refer to the group 1 libraries, are average values for the eight libraries. If results are given for all participating libraries, we will explicitly mention this.

#### 3.1 Contracts

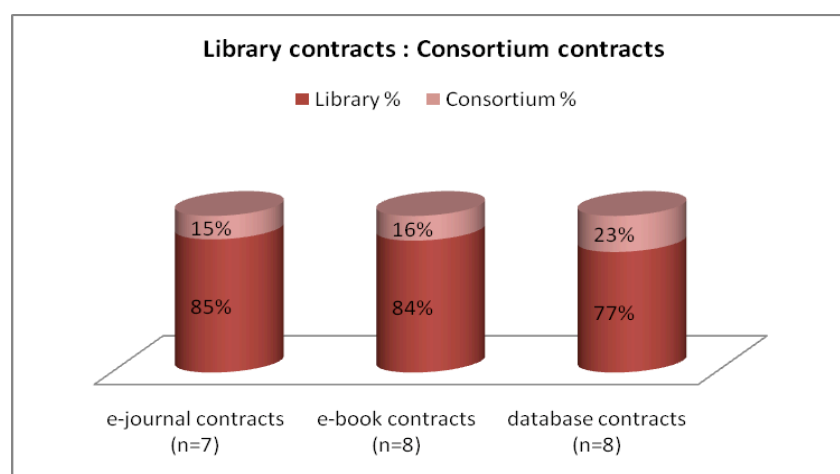
##### Number of contracts

Table 1: Average number of contracts per library negotiated by a library and a consortium

| Number of contracts                    | Number of contracts |            | Ratio of contracts |              |
|--|---------------------|------------|--------------------|--------------|
|  | Library             | Consortium | Library %          | Consortium % |
| e-journal-contracts (n=7) <sup>4</sup> | 66.1                | 10.8       | 85%                | 15%          |
| e-book-contracts (n=8)                 | 6.0                 | 1.1        | 84%                | 16%          |
| database contracts (n=8)               | 36.8                | 11.0       | 77%                | 23%          |

As can be seen in Table 1, the average number of contracts negotiated by group 1 libraries is remarkably high in comparison with the average number of consortium contracts. Most contracts refer to e-journals. For this type of e-resource libraries negotiate about 85% of the contracts themselves, the consortium only 15%. The ratio for e-books is similar, with the only difference that the proportion of contracts for e-books was quite small (about one tenth of e-journal contracts). The share of database contracts negotiated by the consortium is slightly higher and amounts to nearly one fourth of the total number of database contracts.

Figure 1: Ratio of library to consortium contracts by type of e-resource



<sup>4</sup> „n= ...“ in this paper relates to the number of libraries analyzed in a particular question

While the number of consortium contracts was quite easy to determine, the number of library contracts was not. A problematic issue with regard to library contracts was the distinction between contracting and ordering of e-journals. The acquisition of journal packages can be easily identified as a process of contracting, since it includes the processes of evaluating the content and licensing negotiations. Usually it is a time consuming procedure. In contrast, quite many journals are ordered by means of a simple email without a longer evaluation or negotiation process. The distinction gets more complicated for cases which can be found in the continuum between these two extremes. The sensible question here is: When is an acquisition procedure regarded as an order and when as a contract?

A second problematic issue, which appeared in this context, were contracts signed for a longer period, at least more than one year. Not all libraries were able to clearly determine this number of contracts.

### Expenditures

Expenditures for e-resources were also grouped into expenditures for library contracts and expenditures for consortium contracts. Not all libraries could or wanted to provide details about financial issues because of a strict information policy. For this question we can therefore provide only seven answers.

Table 2: Comparison of ratios "library : consortium" for total expenditures and total number of contracts for e-resources

| Expenditures EUR       |                         | Expenditures % |            | Number of contracts % |            |
|------------------------|-------------------------|----------------|------------|-----------------------|------------|
| Libraries <sup>5</sup> | Consortium <sup>6</sup> | Libraries      | Consortium | Libraries             | Consortium |
| 300,764                | 507,548                 | 37%            | 63%        | 81%                   | 19%        |

According to our analyses libraries spent an average amount of about 300,000 EUR (i.e. more than one third) for library contracts in 2007, whereas they spent about 500,000 EUR (i.e. nearly two thirds) for consortiums contracts. This ratio is nearly reversed compared with that relating to the number of contracts. This great difference probably means that libraries work on a large number of small, specific and work-intensive contracts on their own, whereas the complex and more expensive and therefore more substantial contracts are settled by the consortium. Usually consortium contracts represent a large number of libraries and therefore get better prices and conditions.

## 3.2 Electronic resources

Since many libraries still have access rights to e-resources, for which there are no ongoing contracts anymore, we also asked for the number of back files to or archives of e-resources. Table 3 shows the mean values for all types of e-resources based on the data we have got (e-journals (active & archive), e-books, databases (active & back files)). A first analysis revealed that the data concerning e-books and databases seemed to be quite reliable contrary to the data concerning e-journals.

<sup>5</sup> Comments by one library: *Only those packages were taken into consideration, which had been acquired by the e-Media department. It would have been too time consuming to determine single online titles and surcharges for print and online journals.*

<sup>6</sup> Comments by one library: *For journal contracts we considered only the surcharges for the online access, not the print subscriptions, which are the basis for contracts. E-journals: only direct payments for participation in the consortium were considered, costs for consortium print journals are not included.*

Table 3: Average number of e-resources by type (n=8)

| Type of e-resource     | Average number of resources |
|------------------------|-----------------------------|
| e-journals (active)    | 7839                        |
| e-journals (archive)   | 433                         |
| e-books                | 203                         |
| databases (active)     | 95                          |
| databases (back files) | 43                          |

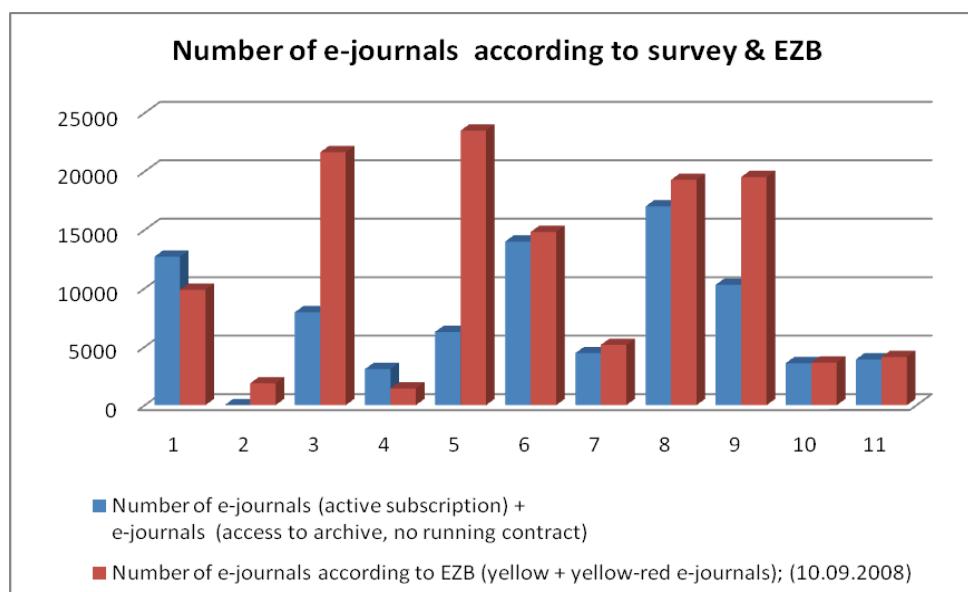
The main reason might have been that the question with regard to e-journals was not specific enough, because there are different ways to count e-journals which may result in quite inhomogeneous results. The original question was related to the number of e-journals to which the library provides access and which therefore triggers some kind of administrative work. To show how this question could have been interpreted, we would like to mention just a few possibilities:

- The number of e-journals to which a library subscribes: This is usually quite a “small” number and generally amounts to a few thousand e-journals.
- The number of e-journals to which a library has access: In this case the number of e-journals is already much higher, since it also includes those e-journals to which access is provided not only by subscription but also by cross access via consortia.
- The number of e-journals provided by the EZB (Electronic journals library): While the above mentioned determination of the number of e-journals is more time-consuming, the number of EZB journals can be collected quickly and easily. Usually it includes subscribed e-journals, cross access e-journals and also other resource types like reports, summaries, working papers etc. (since these kinds of resources are quite often integrated in aggregator databases).

To summarize, the number of e-journals basically depends on the perspective (“subscription” or “access”) taken into account. The number of e-journals to which a library has access may be several times higher than the number of subscribed e-journals.

To provide a better idea about the differences in the e-journal numbers, we compared the indications of the responding libraries with the data provided by the EZB.

Figure 2: Number of e-journals according to the survey and the EZB for 11 participating libraries



As can be seen in Figure 2 the number of e-journals can significantly differ between the responses given and the corresponding values in the EZB<sup>7</sup>. Therefore, we decided not to make any further analysis based on these data, since no reliable and meaningful results could be expected.

The numbers of e-books and databases seem much more reliable, probably because of smaller numbers and less possibilities for interpretation.

Table 4: Average number of e-books and databases (n=8)

| Type of e-resource     | Average number of e-resources |
|------------------------|-------------------------------|
| e-books (totals 2007)  | 203                           |
| databases (active)     | 95                            |
| databases (back files) | 43                            |

Since e-books are a relative new type of electronic resource, the number of e-books ranges from 0 to 544, also databases show a similar range.

In comparison to print resources, which are usually included only in the catalogue, there seem to be more management tools necessary for the administration and the making available of e-resources. As is revealed from the following table, e-books and databases are managed by means of at least two and e-journals by more than three tools on average.

Table 5: Average number of management tools per e-resource type (n=8)

| Type of e-resource <sup>8</sup> | Average number of management tools |
|---------------------------------|------------------------------------|
| e-journals                      | 3.4                                |
| e-books                         | 2.1                                |
| databases                       | 2.6                                |

Considering the number of tools, it seems that there does not exist an optimal management and access system for e-resources, otherwise this double and triple effort, which might be quite time consuming, would not be necessary. Not only e-resource data need to be managed, also the tools themselves need maintenance on a regular basis.

### 3.3 Tasks and internal organization

We identified acquisition and making available as the two main task groups with regard to e-resources. The question related to the ratio of these two task groups delivered quite homogeneous results. Nearly all libraries (group 1 and 2) indicated a ratio between acquisition and availability ranging from 20:80 to 40:60, the average ratio for group 1 and group 2 libraries

<sup>7</sup> The color code in the EZB indicates the accessibility of e-journals. Green means "free access", yellow "access by subscription" and red "no access".

<sup>8</sup> Comments by 2 libraries: 1) *The catalog includes all e-books, but only those e-journals where only single titles were acquired and only those CD-ROM databases with one concurrent user.* 2) *Access to online resources is maintained by a HAN-server.*

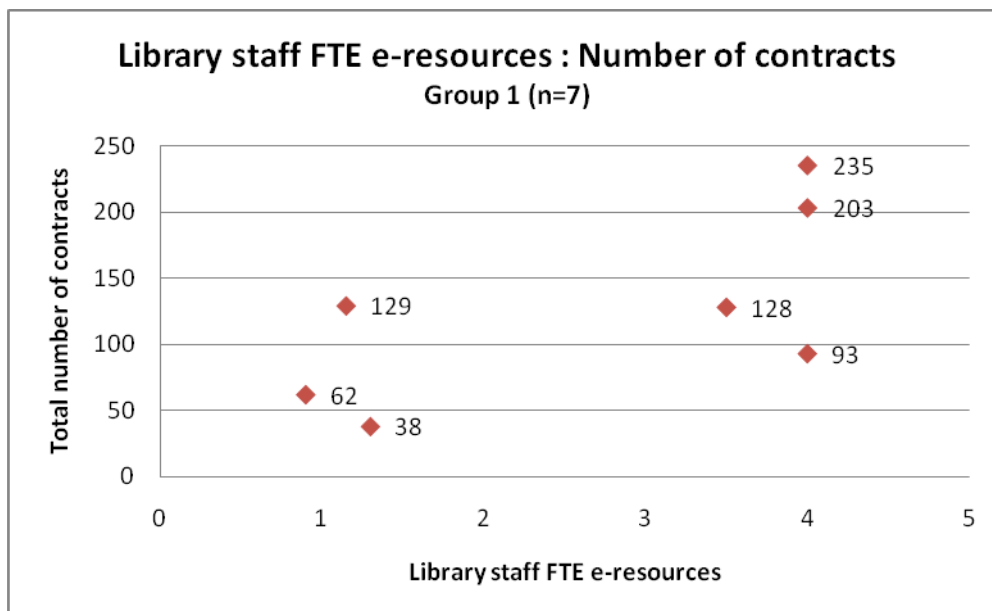
was 32:68. This means that library staff in charge of e-resources spend about one third of their time with acquisition tasks and two thirds with tasks related to the making available of e-resources. Only one library indicated an opposite ratio. The main reason might have been that this library was in charge of many consortium affairs at that time.

While the ratio of acquisition to making available is homogenous throughout the libraries, the way how these processes are integrated in the libraries differs a lot. In three out of eight group 1 libraries there is an own department for the management of e-resources, in the remaining five libraries, this work is organized cross-departmentally, depending on the specific library structure and on already existing workflows.

### 3.4 Bivariate analysis

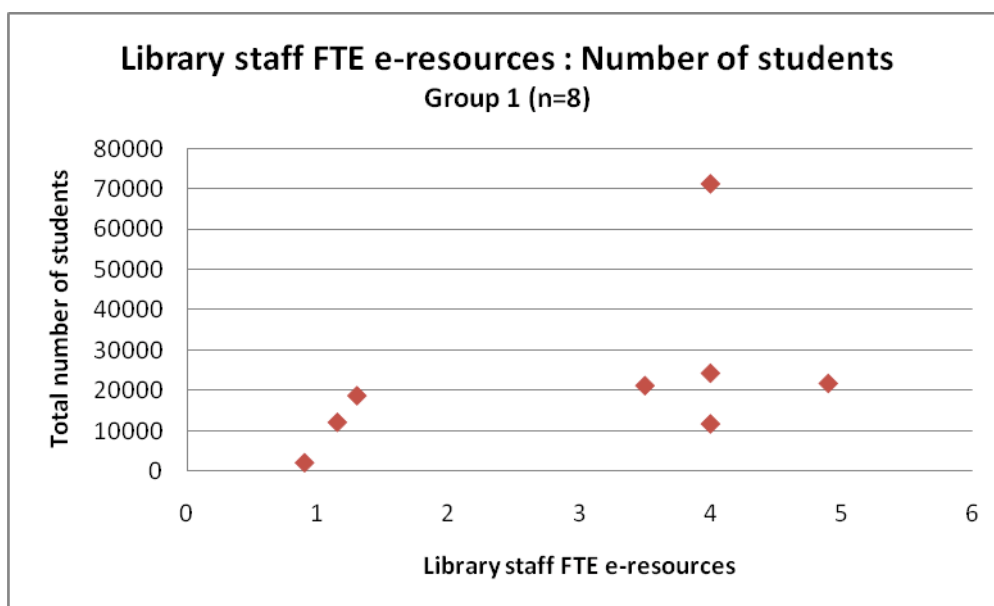
The starting point for our bivariate analysis was the supposition that there is a correlation between the number of contracts and e-resources and the number of library staff in charge of e-resources (in FTE).

Figure 3: Library staff (FTE) for e-resources : total number of contracts



Basically, the results in Figure 3 can be divided into two groups. In the smaller group, 1 to 1.5 library staff (FTE) are in charge of e-resources. The number of contracts ranges from 38 to 129. In the bigger group e-resources are managed by approximately 4 staff members (FTE), and the total number of contracts ranges from 93 to 235. Altogether a moderate correlation can be identified.

Figure 4: Library staff (FTE) for e-resources : total number of students



Without considering the top and bottom outlier in Figure 4, no relationship is identifiable between library staff (FTE) in charge of e-resources and the total number of students.

Figure 5: Library staff (FTE) for e-resources : total number of library staff

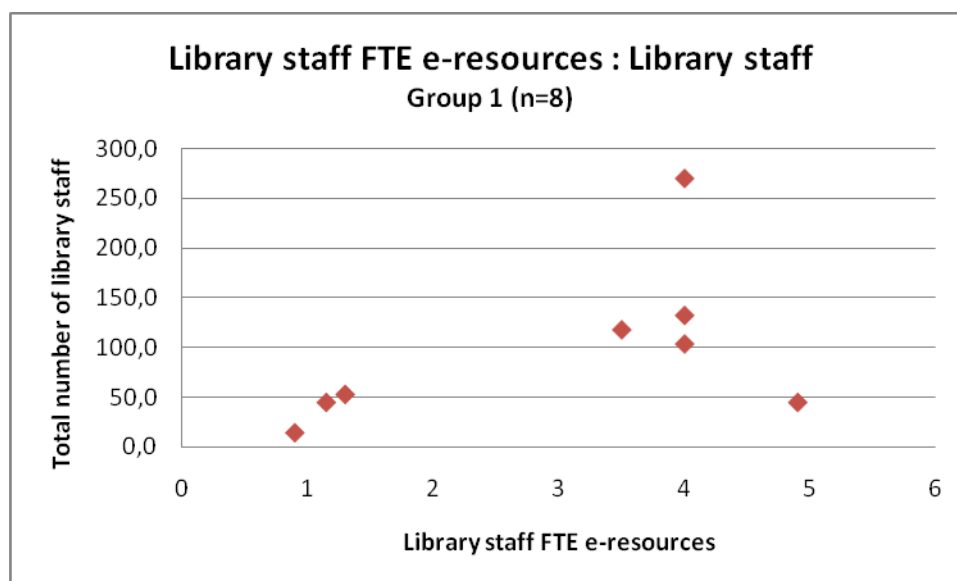
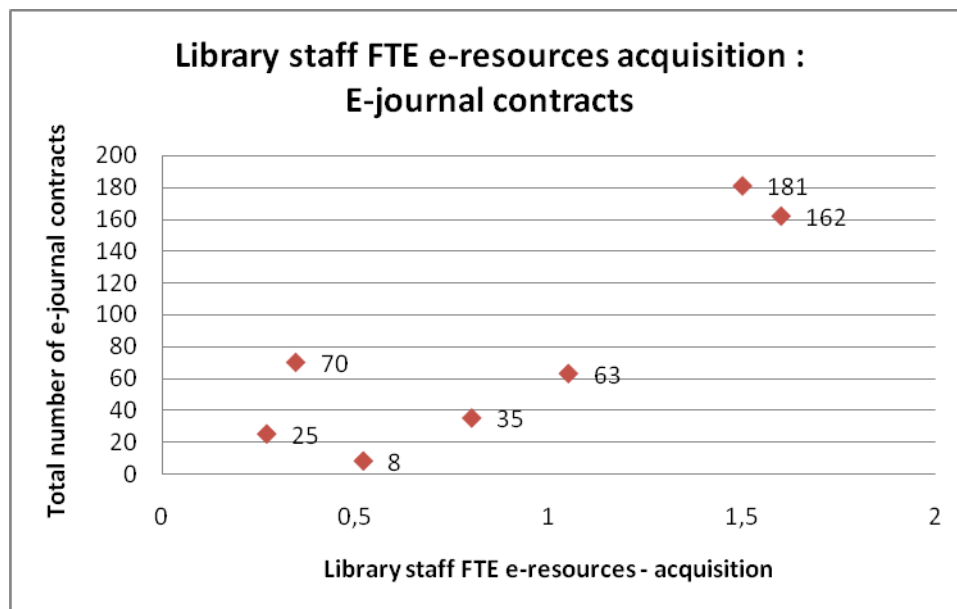


Figure 5 shows a weak relationship between library staff (FTE) in charge of e-resources and the total number of library staff (FTE). It is remarkable that even in the largest library of our sample the total number of library staff for e-resources does not exceed 4 FTE. On the other hand a smaller library (in terms of staff members) responded that there are 5 staff members in charge of e-resources. There are two explanations for this mismatch: (1) Especially in libraries where there does not exist an own department in charge of e-resources it might be difficult to estimate the total workload of all tasks related to the administration of e-resources. (2) But even if there is an own e-resources department there might be differences in interpreting which tasks relate to this department. For instance, in one library there might be a systems librarian who is in charge of all the technical tasks like (technical) trouble shoot-

ing, in another library these tasks may be handled by the IT department. The same holds true for legal advice which could be given either by a staff member of the library or by the legal department. These examples show how difficult it is to get a reliable and comparable number for the staff in charge of e-resources.

Figure 6: Library staff (FTE) for acquisition of e-resources: total number of e-journal contracts



Based on the ratio of the task groups acquisition to availability (30% : 70%), we estimated the library staff only in charge of acquisition processes by multiplying the total number of staff with the average proportion of acquisition tasks (30%). Since the main task of this staff is to negotiate contracts for e-resources, we expected a higher correlation with the total number of contracts. As Figure 6 reveals this assumption turned out to be true.

To sum up - the results of the bivariate analyses revealed no strong relation between the number of library staff (FTE) in charge of e-resources and the other variables. A higher correlation could only be determined when relating the staff in charge of the acquisition of e-resources with the number of e-journal contracts.

#### 4 Summary and conclusion

This survey was a first step towards identifying characteristics of e-resources especially with regard to measuring their workload. We are aware that our study raises more questions than it gives answers.

One main conclusion of this survey is that the quantitative determination of contracts and e-resources is quite a difficult task. This relates especially to the wide scope of interpretation with regard to e-resources: What exactly is a contract? What exactly is an e-resource which really generates work for the library? Is it possible to draw a clear line between contracts and e-resources? The same relates to the assignment of tasks. E-resources necessitate new forms of occupational skills. In some cases these skills are provided by the library staff, in others libraries have co-operations with other departments (e.g. legal department, IT department). This makes it difficult, however, to compare data between libraries.

In spite of interpretation issues, the study shows quite an interesting picture. With regard to contracts it is: In Austrian libraries most of the contracts are negotiated by the libraries themselves, the share amounts to about 80% of all contracts. This high percentage of library contracts influences also the time needed for acquisition processes and is therefore reflected in a quite high percentage of total acquisition work, which amounts to about 30% (in compari-

son to tasks relating to the making available of e-resources which accounts for approximately 70%).

Only about 20% of the contracts are negotiated by a consortium. As a matter of fact, the consortium we are talking about is currently in the process of reorganization. So far it has been staffed with only one staff member, another person is going to be employed. This may also be a reason for the small percentage of consortium contracts. Future analyses will show how the situation will develop.

Though the proportion of consortium contracts is relatively small (about 20%), their proportion of costs is relatively high (about 63%). Consortium contracts seem to be more extensive and probably also more complex because of their size and the number of covered resources. Furthermore they include more cost-intensive electronic resources.

One important aspect, which has not been mentioned yet, but which was alluded in several discussions, is the time spent for "trouble shooting" due to "technical" problems. In such situations it is necessary to react to questions like: Why can the resources not be accessed? Or: Why does the database not respond? These tasks are part of the activities we related to the making available of e-resources and are quite often underestimated with regard to their time exposure. If a user reports on some malfunction of e-resources, librarians have to take care of the problem, either in identifying, analyzing and to solving it or in contacting the relevant person. However, the situation needs to be taken care of and quite often creates an enormous workload.

It is also remarkable that e-resources are managed by more than one tool. It seems that no system meets all requirements. In larger libraries up to 4 management tools are used to administrate e-resources. It seems that the counterpart of a catalog for electronic resources has not been created yet. A library management tool for print resources usually provides both a functionality for the library personnel (acquisition and technical processing, statistics) and an access functionality for the users (e.g. OPAC). For e-resources this "all-inclusive-tool" has not been developed yet.

With regard to staffing, the average number of library staff for electronic resources amounts to less than 1 FTE in smaller libraries (group 2) and to about 3 FTE in larger libraries (group 1). Even big libraries (in terms of resources, contracts, students) were not staffed with more than 5 FTE. This observation is, of course, only valid for those libraries which participated in our survey. Furthermore the determination of the FTE dealing with e-resources was not always straight forward since tasks related to e-resources were also organized cross-departmentally. In fact, only 3 out of 8 libraries had an own "e-resources department".

The bivariate analyses were conducted in order to find a correlation between library staff (FTE) for e-resources and other factors, especially number of contracts and the total number of library staff. In several cases a moderate relationship could be identified. A strong correlation was only found between staff in charge of acquisition for e-resources and the total number of contracts.

This survey is a snap shot for the year 2007. Since e-resources underlie rapid changes, the situation will be probably different within a few years. It would therefore be interesting to keep track of the developments. Future studies are therefore suggested in order to gain a deeper insight into this phenomenon.