

Systems librarian, IT librarian, data librarian – Demand for graduates in Germany, Austria and Switzerland: a quantitative job advertisement analysis

Abstract

This paper deals with new job profiles in libraries, mainly systems librarians (German: Systembibliothekare, IT librarians (German: IT-Bibliothekare) and data librarians (German: Datenbibliothekare). It investigates the vacancies and requirements of these positions in the German-speaking countries by analyzing one hundred and fifty published job advertisements of OpenBiblioJobs between 2012-2016. In addition, the distribution of positions, institutional bearers, different job titles as well as time limits, scope of work and remuneration of the positions are evaluated. The analysis of the remuneration in the public sector in Germany also provides information on demands for a bachelor's or master's degree.

The average annual increase in job vacancies between 2012 and 2016 is 14.19%, confirming the need and necessity of these professional library profiles.

The higher remuneration of the positions in data management, in comparison to the systems librarian, proves the prerequisite of the master's degree and thus indicates a desideratum due to missing or few master's degree courses. Accordingly, the range of bachelor's degree courses (or IT-oriented major areas of study with optional compulsory modules in existing bachelor's degree courses) for systems and IT librarians must be further expanded. An alternative could also be modular education programs for librarians and information scientists with professional experience, as it is already the case for music librarians.

Keywords:

Systems Librarian, Data Librarian, Job advertisement analysis, Job profiles, New competencies

Introduction

In today's world, information is no longer disseminated only through print media, but increasingly through digital publications and data. Due to the growing digitization and data intensity of the sciences, new fields of activity are growing, and new professional areas of work are emerging, while previous ones are changing. Especially in dealing with research data and open data/science, trained specialists as an interface between library, science and IT department are needed. This development is accompanied by current projects at European level, for instance the flagship project European Open Science Cloud (EOSC), which tries to create an open platform and infrastructure for the exchange of FAIR (FAIR data principles for research data: findable, accessible, interoperable und reusable) research data for the common use and reuse in order to generate interdisciplinary and international new knowledge. The Commission High Level Expert Group on the European Open Science Cloud (2016) estimate that half a million 'core data scientists' are needed to make the most of open research data in Europe and recommend the funding of a concerted effort to develop core data expertise. The RfII – German Council for Scientific Information Infrastructures (2016) argues in the same direction and recommends promoting the general and specialist competence of young

researchers with regard to digitalization. New job profiles (such as data archivist, digital documentary, data librarian, data scientist, data curator) should be made possible and corresponding full courses of study should be developed in order to bridge the gap between scientists and information infrastructures.

Data librarians and systems librarians have been trying to fill in the intersection between IT department and library in English-speaking countries for some time. In the German-speaking countries, the term systems librarian is used, but also IT librarian or library informatics specialist (German: Bibliotheksinformatiker), some of whom are used synonymously. There are also specifications of the other roles — data manager (research data, metadata, etc.), data scientist, data curator, data analyst, and data creator — in data management. Caspers (2015) gives a similar overview of job descriptions in his work, showing that other terms are also conceivable. There are no clearly formulated definitions of the individual designations yet, but there are gradual delimitations in the literature.

- **Systems librarian:**
According to Caspers (2015), the systems librarian is a professional specialization that has both information technology and library tasks (with a focus on library systems).
- **IT-librarian:**
According to Caspers, it is synonymous with a systems librarian, especially before the name of the systems librarian could become accepted in job offers due to the increased occurrence of jobs.
- **Data librarians:**
Following Büttner, Rumpel and Hobohm (2011), there are four roles in data management:
 - o Data Creator, which produces data
 - o Data Scientist, which supports e.g. data analysis
 - o Data Manager, who is responsible for technical aspects such as storage and access
 - o According to Büttner, Rumpel and Hobohm, data librarians are responsible for the development, evaluation and conservation of data and also provide their own services in the research process
- **Library informatics specialist:**
According to Caspers, library informatics specialists are not an alternative term for the systems librarian. They could be considered as a higher education level for systems librarians, as their IT skills are even more pronounced.

In the journal article "Data Librarian: Das moderne Berufsbild", Hapke (2016) briefly presents the changes in the professional profile of librarians in practice and in studies as well as the delimitation of new job titles. The working paper by Pampel, Bertelmann and Hobohm (2010) deals with the management of (research) data and related fields of activity/roles and new competences for librarians and how libraries as service institutions could structurally address these fields of action. It also provides an overview of American job advertisements and their requirements for Data Librarians. The sixth Bibcast by Seeliger, Hoffmann and Kiefer (2016) entitled "Systembibliothekar, Bibliotheksinformatiker, IT-Bibliothekar – lässt sich dieses Anforderungsprofil akademisieren für eine Klientel im Berufsstand?" deals with the changing tasks due to the complexity of new systems and the growing demand in academic libraries. In addition, the master's programme of library

informatics specialists at the University of Applied Sciences Wildau is presented, which focuses on basic knowledge of computer science, Java programming, databases, search engine technology, interfaces and data formats, library management systems, app development, and IT security. Markus Caspers (2015) has researched and confirmed the necessity of systems librarians in his work and has created a description of the job profiles in Germany using expert interviews and literature research. It also notes that an analysis of job advertisements is still needed and would be useful.

About systems librarians and the other job specifications, there have been few or no scientific publications on the actual quantitative job requirements in the German-speaking countries so far, so that these blank spaces are answered with this work. The research question arises accordingly:

What is the current quantitative demand for systems librarians, IT librarians, library informatics specialists and data librarians and other data management positions in the German-speaking countries?

Data and Analysis

The data for the analysis are taken from a data publication by Blümel et al. (2017) on Zenodo, which includes all published job offers — a total of 8,291 — on OpenBiblioJobs (<https://jobs.openbiblio.eu/>) between 17.07.2012 and 31.12.2016.

This data publication has been analyzed regarding various job titles to filter the matching and relevant job advertisements.

Afterwards, the data was combined and assigned to Excel files (one for systems and IT librarians and one for data management positions). For each Excel table, the job advertisements that can still be called up are broken down into their individual information. In addition, there is a general overview with job advertisements for which the URL was no longer available.

- Systems and IT librarians combined:
24 of 90 job offers were still available => ≈26,67%
- Positions in data management:
13 off 55 job offers were still available => ≈23,64%
- The job advertisements for library informatics specialists were not summarized in an Excel spreadsheet due to the small number of jobs (five job offers); one of five were still available on the web and thus fully evaluable (=20%)

Of the total of 150 jobs filtered, 37 were still available on the web, resulting in a ratio of ≈24.67%. Since all values remain below 30%, the results cannot be regarded as representative, but can be considered significant. From the job offers that were no longer available on the web, only basic information (metadata) that was entered directly on OpenBiblioJobs when the advertisement was uploaded could be extracted (e.g. job title, institution, deadlines, time limits, scope of duties). Any multiple entries from the data publication are eliminated in the Excel files. Entries with multiple job titles (e.g. job advertisers advertised with "systems librarian or IT librarian" in their advertisements) were assigned to only one Excel spreadsheet. Due to their project character, positions in which scientific staff were sought are not considered. Job offers with the job title "data logger" (German: Datenerfasser) as well as offers for student assistants were also not taken into account, as these do not

reflect the job specification with a university degree due to the low remuneration. Job offers for which pure computer scientists were sought were also not included in the analysis.

Results

Systems and IT librarian's job demand:

- **Quantitative job demand and trend**

90 of 8291 were assigned to the job title systems librarian/IT librarian, which corresponds to: $\approx 1,09\%$.

2012: 6 of 999	→ $\approx 0,60\%$
2013: 19 of 2262	→ $\approx 0,84\%$
2014: 23 of 1636	→ $\approx 1,41\%$
2015: 16 of 1535	→ $\approx 1,04\%$
2016: 26 of 1859	→ $\approx 1,40\%$

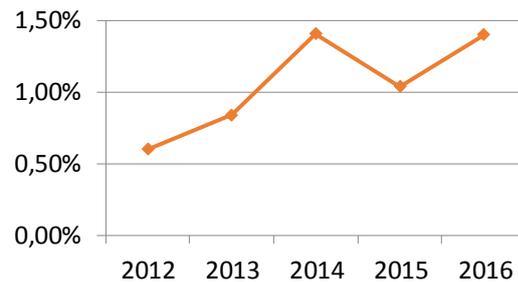


Figure 1: Job demand of systems and IT librarians

- **Job distribution in the German-speaking countries**

70/90 of the positions were sought in Germany (=77.77%), in Austria twelve (=13.33%) and in Switzerland eight (=8.88%).

- **Breakdown of institutional bearers in Germany**

- o 1x municipality – public library
- o 60x states – approx. 30% network centres, approx. 60% university libraries, approx. 6% state libraries (rest: archives, etc.)
- o 4x private companies
- o 1x church
- o 4x at federal level

Library informatics specialists job demand:

- **Quantitative job demand and trend**

5 of 8291 were assigned to the job title library informatics specialists, which corresponds to: $\approx 0,06\%$.



Figure 2: Job demand of library informatics specialists

- **Job distribution in the German-speaking countries**

3/5 of the positions were sought in Germany ($\approx 83,64\%$), in Austria zero (=0) and in Switzerland two ($\approx 5,50\%$).

- **Breakdown of institutional bearers in Germany:**

- o 1x municipality
- o 1x states
- o 1x at federal level

Job demand data management:

- **Quantitative job demand and trend**

55 of 8291 were assigned to data management positions, which corresponds to: $\approx 0,66\%$.



Figure 3: Job demand in data management

- **Job distribution in the German-speaking countries**

46/55 of the positions were sought in Germany (≈83,64%), in Austria six (≈10,91%) and in Switzerland three (≈5,50%).

- **Breakdown of institutional bearers in Germany:**

- o 1x municipality
- o 32x states – one network centres, approx. 78% university libraries and approx. 12% states libraries (rest: e. g. special libraries)
- o 2x at federal level
- o 11x private companies – over half in publishing houses

Summary:

- **Quantitative job demand and trend**

In total, 150 out of 8291 job offers with systems librarians, IT librarians, library informatics specialists and data management jobs (= occupations in which IT skills and library knowledge constitute a core competence) were published in the period under review (17.07.2012 - 31.12.2016). This results in a rate of 1.81%. Broken down by year, this shows the following trend:

2012: 14 von 999	→ ≈1,40%
2013: 32 von 2262	→ ≈1,42%
2014: 32 von 1636	→ ≈1,96%
2015: 28 von 1535	→ ≈1,82%
2016: 44 von 1859	→ ≈2,37%

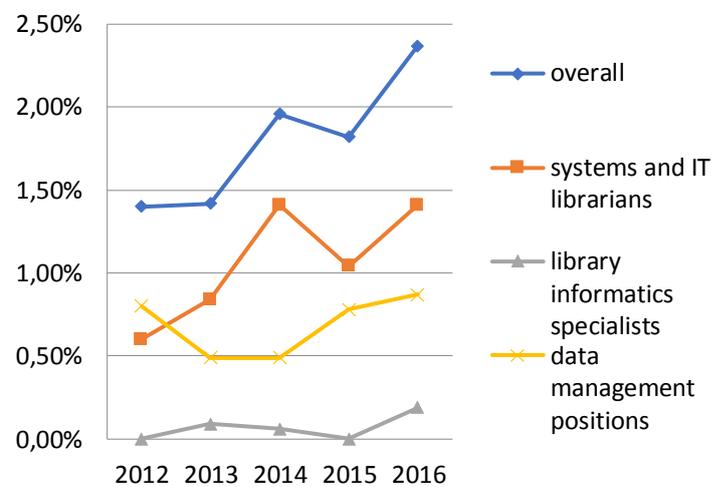


Figure 4: Job demand overall

With the formula for calculating average annual growth, the average annual growth between 2012 and 2016 is 14.19%.

- **Job distribution in the German-speaking countries**

119 of the 150 vacancies were searched for in Germany ($\approx 79,33\%$), 18 in Austria (12%) and 13 in Switzerland ($\approx 8,67\%$).

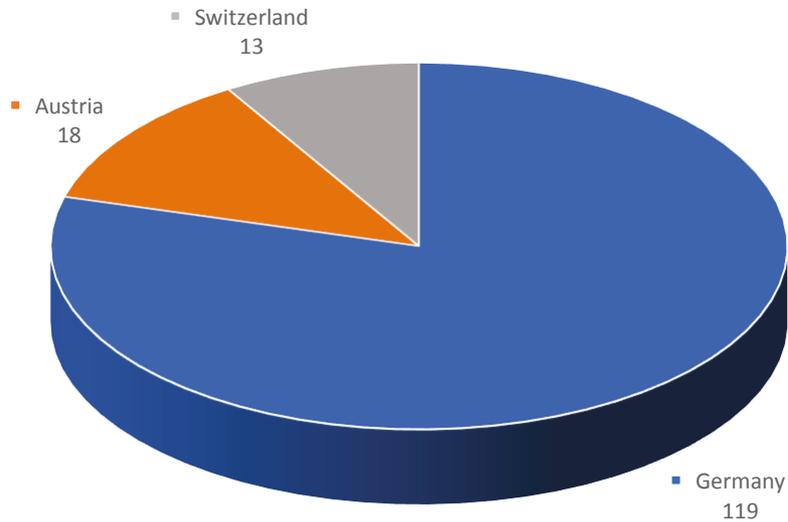


Figure 5: Job distribution in the German-speaking countries

- **Breakdown of institutional bearers in Germany:**

- o 1x church
- o 3x municipality
- o 93x states – approx. 25% network centres, approx. 65% university libraries, approx. 9% states libraries (the rest varies)
- o 7x at federal level
- o 15x private companies

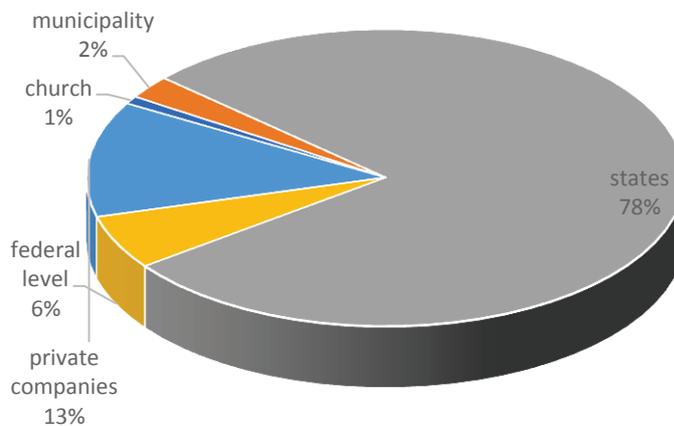


Figure 6: Institutional bearers in Germany

Time limits, remuneration, scope of work IT- und Systembibliothekar:

- **Time limits**

68% (62/90) of the job offers could be evaluated on the subject of fixed-term contracts:

≈41.94% (26) of these are permanent positions and ≈58.06% (36) are temporary positions.

≈38.88% (14) are initially/for the time being limited or their delimitation is planned.

Duration of fixed-term jobs (with 30 of 36 positions, ≈83.33%, a duration was given):

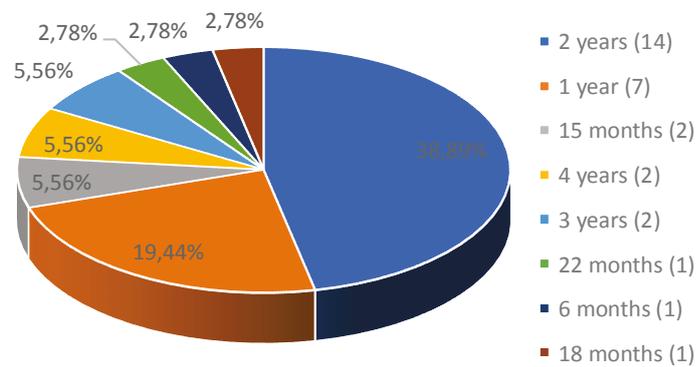


Figure 7: Time limits of systems and IT librarians

- **Remuneration of public service positions in Germany**

Of the 70 jobs in Germany, 57 positions on the subject of remuneration (whether TVöD/TV-L or TV-Bund etc. was not taken into account; only if payment according to BBesO was possible, a separation was made) were evaluated, which corresponds to ≈81.43%.

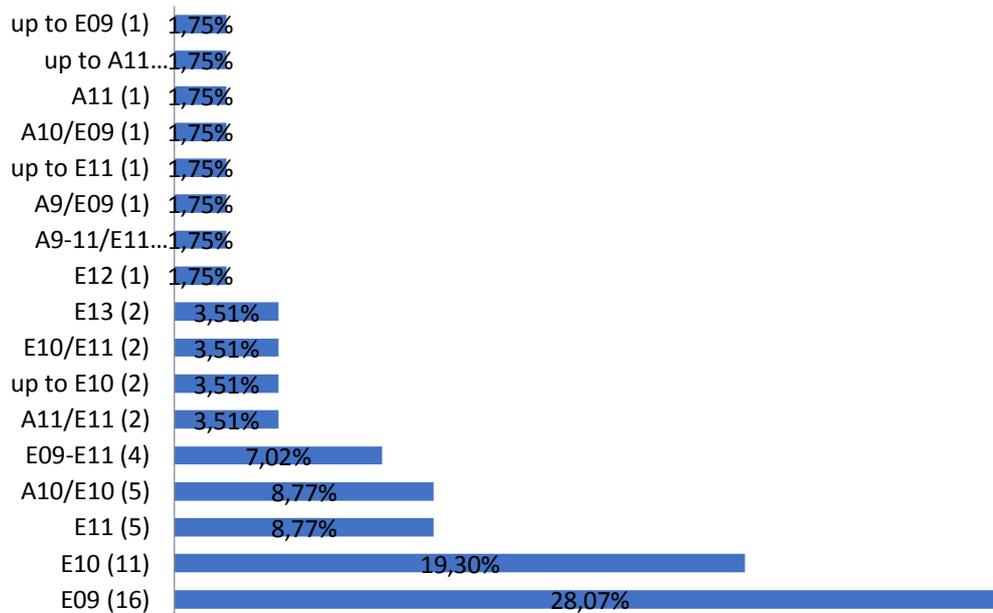


Figure 8: Remuneration of public service positions in Germany (systems and IT librarians)

- **Scope of work**

54,44% (49/90) of the jobs had information on the extent of the weekly working time or the percentage of workload:

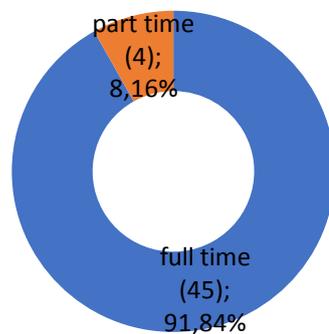


Figure 9: Scope of work of systems and IT librarians

Time limits, remuneration, scope of work of library informatics specialists:

As with systems librarians and IT librarians and data management positions with regard to contract conditions, no evaluation was carried out here due to the low data availability.

Time limits, remuneration, scope of work in data management positions:

- **Time limits**

≈56,36% (31/55) of the job offers could be evaluated on the subject of fixed-term contracts:

≈16,13% (5) of these are permanent positions and ≈83,87% (26) are temporary positions.

≈6,45% (2) are initially/for the time being limited or their delimitation is planned. Duration of fixed-term jobs (with 19 of 16 positions, ≈73.08%, a duration was given):

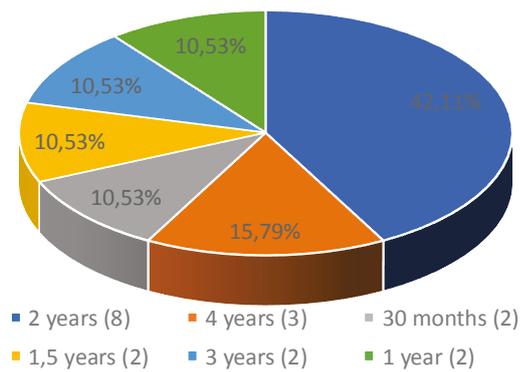


Figure 10: Time limits of data management positions

- **Remuneration of public service positions in Germany**

Of the 46 jobs in Germany, 27 positions on the subject of remuneration (whether TVöD/TV-L or TV-Bund etc. was not taken into account; only if payment according to BBesO was possible, a separation was made) were evaluated, which corresponds to ≈58,70%.

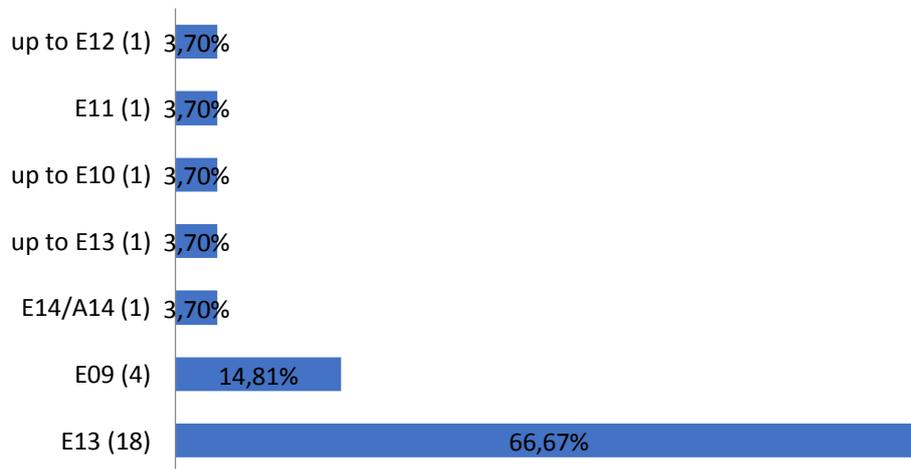


Figure 11: Remuneration of public service positions in Germany (data management)

- **Scope of work**

≈45,45% (25/55) of the jobs had information on the extent of the weekly working time or the percentage of workload:

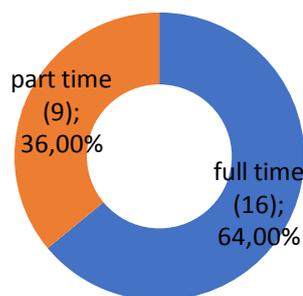


Figure 12: Scope of work (data management)

Total remuneration of public service positions in Germany:

Whereas for systems librarians & Co. the wage classification is mainly set in the remuneration group 09-10, the jobs in data management are mainly in area E13.

Conclusion

The term "systems librarian" has established itself clearly ahead of all others in terms of numbers.

The data librarian is basically — there was only one job posting — not used as a job title in the German-speaking countries in the published job offers on OpenBiblioJobs. This means that the system librarian's job title has become established instead.

The higher wage classification of the positions in data management, E13 compared to E9-10 for systems librarians & Co. shows that a master's degree is increasingly required for data management positions; the analysis of the required degree with regard to the concrete positions would be useful for this purpose. The evaluation shows that systems librarians & Co. can be employed with bachelor or diploma. However, a detailed analysis of the requirements in practice is recommended.

The necessity of the systems librarian, which has already been researched in science, is confirmed by the evaluation of the job demand (with the average annual increase in job vacancies between 2012 and 2016 of 14.19%).

Whether a rising rate of job offers to system librarians & Co. (last with a value of 2.37%) is sufficient to establish further and increased degree course offers would have to be investigated or whether this value continues to rise slowly as expected. The need for a master's degree course in data management should be examined; an analysis would make sense for this purpose. A master's degree course for systems librarians is not likely to be needed, since on the one hand the remuneration is too low and on the other certified further education is possible. Alternatively, parts of the normal bachelor's degree course as elective modules could also provide the opportunity to acquire deeper knowledge of computer science in order to meet the need for systems librarians. Accordingly, it would make sense to research library courses of study on the basis of module manuals to determine the extent to which content is already represented and where there is a need for improvement. Furthermore, the possibility of an additional qualification, similar to that for music librarians, would be conceivable, but it would have to be checked whether the content is adequate or whether the number of hours is high enough to convey the content sufficiently deep.

A further analysis would have to deal with the tasks and competences (requirements profile: required degree, expertise and key qualifications) of the systems librarians in order to compare the tasks and skills mentioned in the theory with practice. There is not enough data available on the library informatics specialist to support Casper's statement in the introduction that it could be a higher education level of the systems librarian. On the one hand, there are positions that use the term as a synonym for IT or systems librarians, on the other hand, it is also used as a stand-alone job title in job offers. In order to check whether the library informatics specialist is an independent occupation specification when the tasks and competences are evaluated, further job offers of pure library informatics specialists, especially with regard to tasks and knowledge, would have to be compared with those of the system librarian. However, the prerequisite for this would be a sufficiently high number of job offers that are currently not available according to this data situation.

Moreover, there is no clear definition of the systems librarian's job title; a future task of library associations and educators as soon as an analysis of the actual areas of responsibility and competencies has been carried out and the necessary information is available.

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