Competency requirements in research information management and reporting: evidence from a national survey in Germany

Introduction

The advancement of research information management (RIM) and reporting is both a technical and a personnel matter. As such, task areas and competencies of Current Research Information System (CRIS) managers have been increasingly recognized as important topics of professional development and study (Blümel et al. 2018; Dvorak & DeCastro 2019; Piromalli; 2019). Research on human resource development indicates that competencies can be integrated into a comprehensible, application-related, and future-oriented framework: a so called competency model (Campion et al. 2011; Stevens 2013). In this paper we intend to empirically enrich and concretize earlier work on a competency model for RIM as an emerging task area. The model is ultimately intended to represent different competency requirements and job profiles (Schelske & Thiedig, 2019).

Towards a competency model for research information management and reporting

The preliminary model has been developed based on theoretical considerations drawn from research on professional competence (Mulder, 2014) and is characterized by a role-based and modular structure. *Modularity* is an important aspect necessary to adequately capture the entire spectrum of the various competencies in RIM and reporting which are hardly found in only one person. Depending on the job profile and the organizational context, the degree of specialization and areas of expertise of CRIS personnel are variable. Specialists as well as all-rounders should therefore be represented by different sets of roles. *Roles* are the most complex elements of the model. Each role characterizes a professional sub-identity associated with a specific field of activity and respective competencies. The model includes a core role (*Research service manager*) and other roles, which together are intended to represent the range of competencies of RIM and reporting. Preliminary professional roles that have been identified are e.g. *Research Service Manager* (to reflect knowledge about structures and policies of research institutions and knowledge about research processes, funding structures, and publication behavior in different research fields), *Researcher* (to reflect the ability to collect, analyze, report, and interpret data), *Communicator (*for the ability to inform, support, and advise various stakeholders*)*, as well as *IT expert* to (very broadly) capture the diversity of skills in the IT field (see Schelske & Thiedig, 2019).

In the following, the preliminary competency model will be developed further based on findings from a national survey among staff responsible for digitally supported RIM and reporting in German research institutions. First, we analyse which areas of competency are mentioned frequently and can be summarized in a meaningful way in professional roles. Second, we assess whether different role subsets can be identified on the basis of the respondents' task profiles and competencies.

Data and Methods

Our analyses are based on a Germany-wide online survey among personnel responsible for RIM and reporting at Higher Education and research institutions conducted in 2021. The survey focused on the job profiles, areas of responsibility, qualifications and competencies of the respondents, research information collection and processing practices as well as the IT solutions and information systems used for this.

We received 224 complete responses in total, 30 percent of which are from universities, 23 percent from universities of applied sciences, and 40 percent from non-university research institutions. The majority of the respondents work in the central administration (52 percent); 19 percent are located at the library; 17 percent are located directly with the central scientific or administrative management. The remaining respondents belong to a decentralized organizational unit (nine percent) or the IT department (three percent).
Information on the respondents' occupational task areas and activities as well as current and future competency requirements in IT-supported RIM and reporting were collected in the form of multiple free text fields and were subsequently coded. The competency coding scheme was iteratively developed between the authors in several rounds of test-coding subsets of the data with subsequent determination of the degree of agreement (Cohen's Kappa = 0.85) and corresponding adaptation of the coding scheme. It consists of 31 (sub-)codes and covers competencies relating to IT, CRIS implementation and use, data handling and analysis, reporting, evaluation and audit, leadership and management, knowledge of the science system, research experience, personal and communicative competencies, among others. The complete coding scheme will be described in detail in the final paper.
173 respondents provided information on current competency requirements, totalling 546 entries/competencies. Coding and analyses of the data were conducted in MS Excel and Stata 16.

Results

We find three main areas of competence: data competencies, competencies to implement, maintain and develop a CRIS, and socio-communicative competencies. These findings corroborate previous results (Blümel et al, 2018). In addition, we identify a fourth and fifth main area, which we classify on the one hand as *reporting competencies*, which encompass the aspects of analyzing, reporting and evaluating research information. On the other hand, we identify *knowledge about the science system*, including knowledge about the own institution in the context of other research institutions, about the national and international research and funding landscape, and about various research disciplines. In addition, we identify *specific IT skills* in the areas of coding, usability, and IT communication.
In the final paper, we will report the results of our analysis as described above, detailing both quantitatively and qualitatively the competency areas that the respondents considered particularly important. In order to test and develop the modular design of our competency model, we will relate our analyses to distinct task profiles of the respondents, e.g. positions heavily focused on IT or communication. By doing so, we hope to empirically demonstrate that our model is suitable for the description and systematic development of competencies in IT-supported RIM and reporting.

Discussion and outlook

In the final paper, we will discuss the implications of our findings for the reflection on and further development of our modular competency model for RIM and reporting. We will discuss the limitations of our study as well as avenues for future research based on our survey data, such as the inclusion of additional variables relating to task areas, future competency requirements, important achievements at work, as well as job and sociodemographic characteristics.

References

Blümel, I., Walther, T., Zellmann, C., Hauschke, C., Wartena, C., & Hahn, L. (2018). FIS-Curriculum – Bedarfe zur Ausbildung künftiger ForschungsInformations-Manager. *Postersession*. 107. Deutscher Bibliothekartag in Berlin 2018, Hannover, Germany.

Campion, M. A., Fink, A. A., Ruggeberg, B. J., Carr, L., Phillips, G. M., & Odman, R. B. (2011). Doing Competencies Well: Best Practices in Competency Modeling. *Personnel Psychology*, *64*(1), 225–262. https://doi.org/10.1111/j.1744-6570.2010.01207.x

Dvořák, J., & de Castro, P. (2019, October 21). *The Roles and the Competencies of CRIS Managers*. 6th Omega-PSIR User Group meeting, Warsaw University of Technology. http://hdl.handle.net/11366/1175

Mulder, M. (2014). Conceptions of professional competence. In S. Billett, C. Harteis, & H. Gruber (Eds.), *International Handbook of Research in Professional and Practice-based Learning*. Springer Netherlands. https://www.springer.com/de/book/9789401789011

Piromalli, L. (2019). Research Information Management in Italy. The IRIS Platformised Infrastructure as a Sociotechnical Device. *Scuola democratica*, *10*(4), 297-319.

Schelske, S., & Thiedig, C. (2019, November 20). *New professional roles? Competencies and task profiles in IT-supported research reporting – Introduction to the research project "BERTI"*. https://dspacecris.eurocris.org/handle/11366/1229

Stevens, G. W. (2013). A Critical Review of the Science and Practice of Competency Modeling. *Human Resource Development Review*, *12*(1), 86–107. https://doi.org/10.1177/1534484312456690