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Capturing the collaboration intensity of research institutions using social network analysis

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Abstract

The relevance of collaborations among scientists is growing steadily in order to address complex research problems. On the basis of research institutions this trend of increased collaboration is being shaped through interdisciplinary research centres, institutional networks or centres of excellence. The identification and promotion of collaborative research within the own university has become a crucial part of strategic planning. Using CRIS-Data as enrichment for decision-making seems to be a practical and obvious approach since in this environment research information across all disciplines are getting consolidated explicitly. In the field of scientometrics examining research collaboration with methods taken from the social network analysis is widely accepted. Instead of analysing the macro-level of science, this paper deals with the potential benefits of using methods from the social network analysis in providing quantitative information about the intra-organizational collaboration for purposes of research management.

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1. Introduction

In order to address complex research problems the relevance of global collaborations among scientists is growing steadily.¹ There are numerous reasons why collaboration is important in science. Foremost scientists seek to work with the most outstanding colleagues in their field.² Besides that interdisciplinary research approaches are substantial

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drivers of collaboration. On the basis of research institutions this trend of increased collaboration is being shaped through interdisciplinary research centres, institutional networks or centres of excellence.³ This development can among other factors be traced to an ascending appreciation of interdisciplinary research by funding organizations.⁴ In times in which third-party funds represent a remarkable percentage of a universities financial resources an in-depth knowledge of current as well as potential research focuses can be a valuable determinant to position in an increasingly evaluation-based competition with other universities.⁵ Using CRIS-Data for such purposes seems to be a practical and obvious approach since in this environment research information across all disciplines are getting consolidated explicitly.⁶

Foremost two strategic tasks were identified in which knowledge about the characteristics and the intensity of collaborations within a university can provide substantial information:

- Detection, analysis and visualization of (interdisciplinary) research communities as support for applications of third-party funds, focus areas or for establishing interdisciplinary research centres.
- Identification and strengthening of the university-wide research profile

Examining research collaboration with methods taken from the social network analysis is widely accepted.⁷ Co-citation and co-authorship analyses are a growing sub-domain within the field of scientometrics by giving the study of science, communication in science and science policy a quantitative perspective.⁸ Differentiating from the approach of taking the macro-level of science into account, this paper deals with potential benefits of using methods from the social network analysis in providing quantitative information about the intra-organizational collaboration for purposes of research management and communication.

Considering this paper as introductory illustration of application scenarios for capturing the intra-organizational collaboration under usage of social network analysis, the research design as well as the findings are described on more general basis.

2. Collaboration analysis for strategic planning in research institutions

One central aspect for implementation and operation of a CRIS is to perform a university-wide harmonization and consolidation of the decentralized pools of research information.⁹ The evolving centralized data pool can be used to fulfil several tasks in the field of research management. One major sub domain within the area of research management is the institutional strategic planning. In an environment where seeking of third-party funds represents a significant part of strategic planning, knowledge about the existing and potential research focuses of a university is crucial.⁵ The ascending appreciation of interdisciplinary research by funding organizations demands explicit knowledge about present research communities within the institution. As illustrative example the Excellence initiative for German universities can be mentioned. Through the establishment of so called clusters of excellence an enhancement of scientific networking and cooperation was intended. Instead of relying completely on the personal perception of individual persons or groups in determining the potential topics and scientists to be organized in an excellence cluster, a data-oriented and evidence-based analysis under usage of CRIS data compromises extensive potentials to enrich such actions. Furthermore in order to establish a distinctive position in the national research landscape, universities perceive increasingly the need of characterizing their institution through the definition of explicit research focuses. While these processes are highly driven by university-political considerations, evidence-based decision-support can provide added value during the detection of research focuses as well as confirmation for existing focuses.¹ Finally not only at the institutional level insights of research collaboration can enrich strategic planning actions, but deans as well as other faculty staff involved in research management can take advantage of such exploratory approaches in developing future research orientations.

As support for decision-making in general most CRIS vendors have integrated reporting platforms into their solutions.

¹ The German Rectors' Conference established a national research map consisting all german universities including their institutional research focuses. In this setting the acceptance of a research focus requires a cooperation involving 25 professors. For more detail see: <http://www.forschungslandkarte.de/profilbildende-forschung-an-universitaeten/kartensuche.html>

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